

THE IRON AGE

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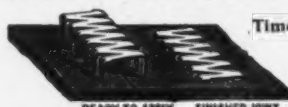
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See page 66

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THE IRON AGE

New York, Thursday, August 1, 1907.

Wellman-Seaver-Morgan Mine Hoists.

The illustrations show two electrically operated double reel hoists, each driven through a double reduction of gears by an alternating current motor. Both are types built by the Wellman-Seaver-Morgan Company, Cleveland, Ohio. The hoist illustrated in Fig. 1 is designed to handle a load consisting of 4000 lb. of ore, double deck cages weighing 4000 lb., and cars weighing 1200 lb., from a depth of 2400 ft. at a speed of 1000 ft. per minute, the up-coming load being partly balanced by the down-going cages. Each reel has a capacity of 2400 ft. of $4\frac{1}{2} \times \frac{3}{8}$ in. rope. The hoist shown in Fig. 2 is de-

signed for heavy work, have few parts, are easily adjusted and require few repairs. It is stated that they enable the operator to change levels with the least loss of time. The post brakes are built up of plates and angles, and are provided with top and bottom adjustments. The brakes are lined with basswood blocks, which, under the maximum load, are subjected to a pressure not exceeding 20 lb. per square inch.

Both the clutches and brakes of the larger hoist are operated by compressed air, the operating cylinders being fitted with a floating valve gear, so arranged that the pistons follow the movement of the controlling levers. The brakes are set by gravity and released by air pressure. In addition to the power operated brakes, there

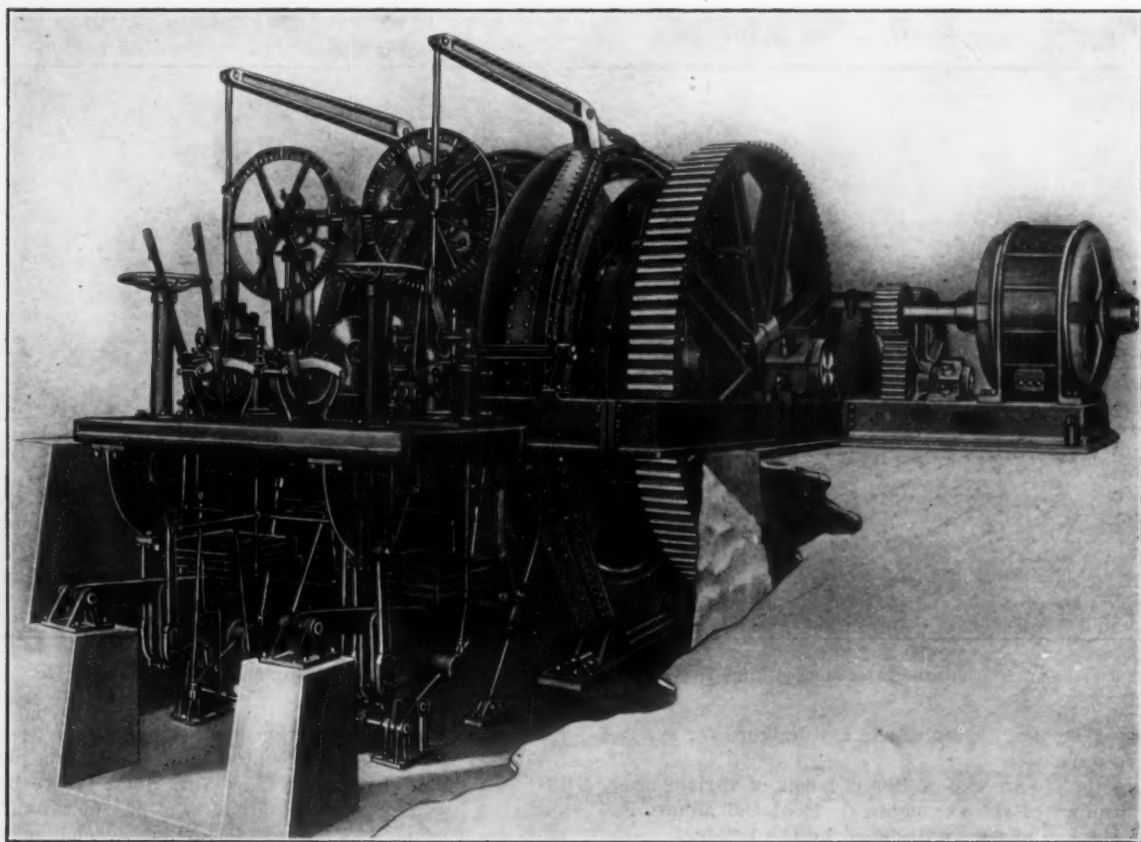


Fig. 1.—A Large Mine Hoist Built by the Wellman-Seaver-Morgan Company for the Compania de Real Del Monte, Pachuca, Mexico.

signed to handle a load consisting of 2000 lb. of ore in a skip weighing 2000 lb. from a depth of 1200 ft. at a speed of 500 ft. per minute, and in this case also the up-coming load is partly balanced by the down-going skip. Each reel has a capacity of 1200 ft. of $3\frac{1}{2} \times \frac{3}{8}$ in. rope.

The following description of the larger hoist applies equally well to the smaller one, with the exceptions which are mentioned: The hoist is supported on a cast iron bedplate of the inverted U type, hollow in section and surrounding the entire machine. The reel shaft rests in two large adjustable Babbitted bearings, and is designed to carry the maximum load without undue deflection. Each reel is fitted with a friction clutch and post brake. The reel hubs are lined with removable bronze bushings, proportioned so that the pressure upon them will not exceed 80 lb. per square inch of projected area for the maximum load to which each is subjected. The friction clutches are the Webster, Camp & Lane type, which is claimed to be the most successful clutch made for mine hoists up to the present. They are espe-

are provided hand brakes controlled by hand wheels, to be used in case the air pressure fails, and the design of the connections is such that the brakes are set, as above stated, by gravity and released by hand. In the smaller hoist, however, the clutches and brakes are operated by hand levers, conveniently arranged at the front of the hoist.

Each hoist is fitted with a safety device operated from the indicator, and is so arranged that if the cages of the larger hoist are elevated beyond a predetermined point the clutches are automatically thrown out and the brakes are set; or, if the skips of the smaller hoist are raised beyond a certain point, the brakes are automatically applied. This automatic device on the larger hoist is also connected to the hand operated brake mechanism. Each reel of both hoists is fitted with an indicator driven from the reel hub by a heavy bicycle chain and sprockets with cut teeth. All gears have cut teeth of the short involute type.

The electrical equipment of the hoist, shown in Fig. 1, consists of a General Electric type I, 14-pole, 250-hp.,

1040-volt, 50-cycle, three-phase motor, running at 429 rev. per min., and having a full load efficiency of 90 per cent. The full load torque of the motor is 4000 lb. at 1 ft. radius, and the maximum torque is approximately two and one-half times that amount. The motor for the hoist, shown in Fig. 2, is of the same make and type, and operates on alternating current of the same voltage and frequency. It has 10 poles, runs at 600 rev. per min. and has a full load efficiency of 86 per cent. The full load torque of this motor is 525 lb. at 1 ft. radius, and the maximum torque is approximately two and one-half times that amount. The insulation of both motors is tested to withstand 3000 volts alternating current for 1 min., and the temperature will not exceed 40 degrees C. at rated capacity after 24 hours' run.

The controller for the larger hoist is provided with primary contacts, operating in oil, inclosed in a cast iron case, separate from the main controlling mechanism. That for the smaller hoist is provided with primary contacts, operating in oil, contained in the main controller cylinder. For both controllers there are six running points, enabling the operator to run the hoist at several speeds continuously. The resistances are of the standard grid type, the grids being assembled on skeleton

were found to be without rust. In another case a pipe was immersed for 10 years in an artesian well, the water in which had not been pumped for 10 or 15 years, and no corrosion of this inside pipe had taken place, the scale was still as fresh as when the pipe was new, and the tool marks of the pipe coupling apparatus were still perfectly fresh.

"Similar results came under the writer's observation in reference to the condition of rods and nails found in wooden foundations where the surrounding material was impervious to air, and in one case which came under his observation, at the time of the removal of the old elevated railroad columns in Greenwich street, New York City, prior to making way for the new structure in 1878, the bottom part of these columns and the bolts in the masonry were found intact, the corrosion gradually increasing until near the surface, where the material was almost entirely destroyed by rust. The experience with both wood and iron, where the renewal of the oxygen in the surrounding water was prevented, has been uniformly that of finding the material perfectly preserved, so that, in the writer's practice, he does not hesitate to advise the use of either material under conditions where a fresh supply of oxygen is excluded. The casing of concrete, in his be-

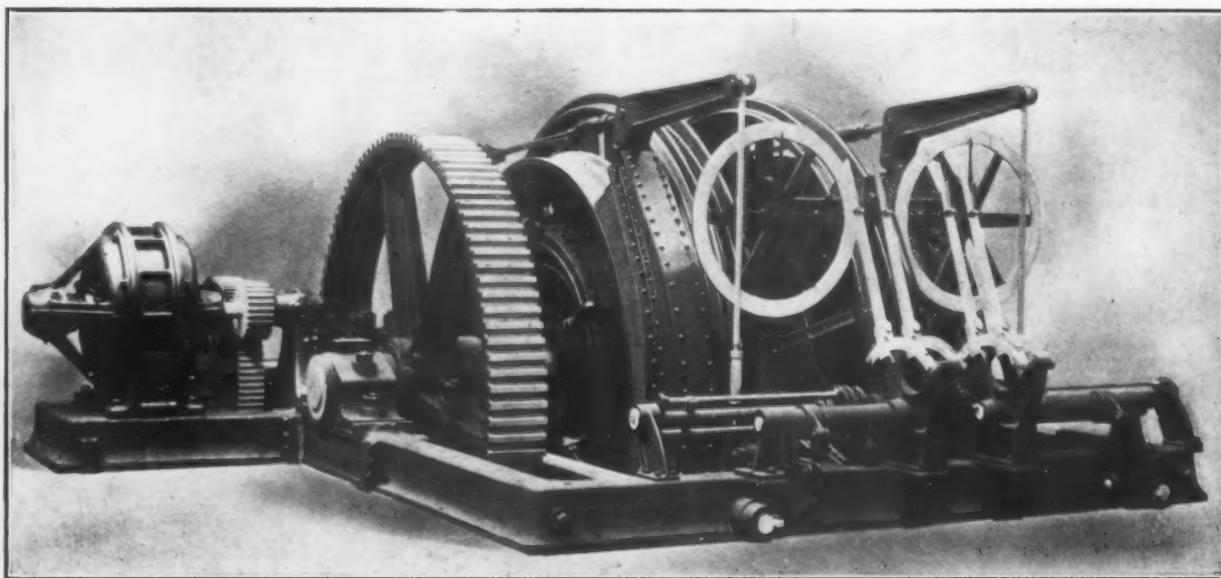


Fig. 2.—A Smaller Wellman-Seaver-Morgan Mine Hoist—Another Built for the Mexican Company Mentioned Under Fig. 1.

frames. They are air cooled and are designed for balance hoisting only.

These hoists are two of 12-reel hoists of various sizes, for the mines of the Compania de Real Del Monte, Pachuca, Mexico, and were designed by the builder.

The Lasting Qualities of Iron in Foundations.

John F. O'Rourke of New York, the well-known engineer, in discussing before the convention of the American Society of Civil Engineers in Mexico the question of the lasting qualities of iron and steel in foundations, made the following statement:

"Iron and steel used in foundations, apart from conditions where electrolysis may occur, last indefinitely when in direct or indirect contact with water, provided the water remains unchanged. The reason for this is obvious. Water attacks iron or steel on account of the oxygen it contains, and, if this is a proportionately small quantity, the amount of oxygen contained in wet concrete or ground is negligible, and, having once been exhausted, the metal remains unharmed and protected.

"The writer has seen many cases where immersion in standing water has been a matter of years, and in every case the effect upon the metal has been no greater than if it had stood for the same length of time in linseed oil. In one case bolts on the inside of cast iron cylinders, filled with concrete, were exposed to the salt water in the Harlem River for more than 30 years, and when removed

lief, is an absolute protection against any oxygen penetrating to the surrounding water, and the uniform practice in foundation work in New York City, where both materials are used in combination, is to pay no attention to waterproofing as a preservation, but depend on the concrete to preserve the iron, which it does in the manner stated. There are exceptions to this, of course, but, generally speaking, where the waterproofing is put underneath the steel, it is for reasons connected with the waterproofing itself, more than from any intention to protect the steel in that way. As a matter of fact, water in one form or another is always a possibility, but conditions can be insured which will prevent its being changed, which is the great desideratum."

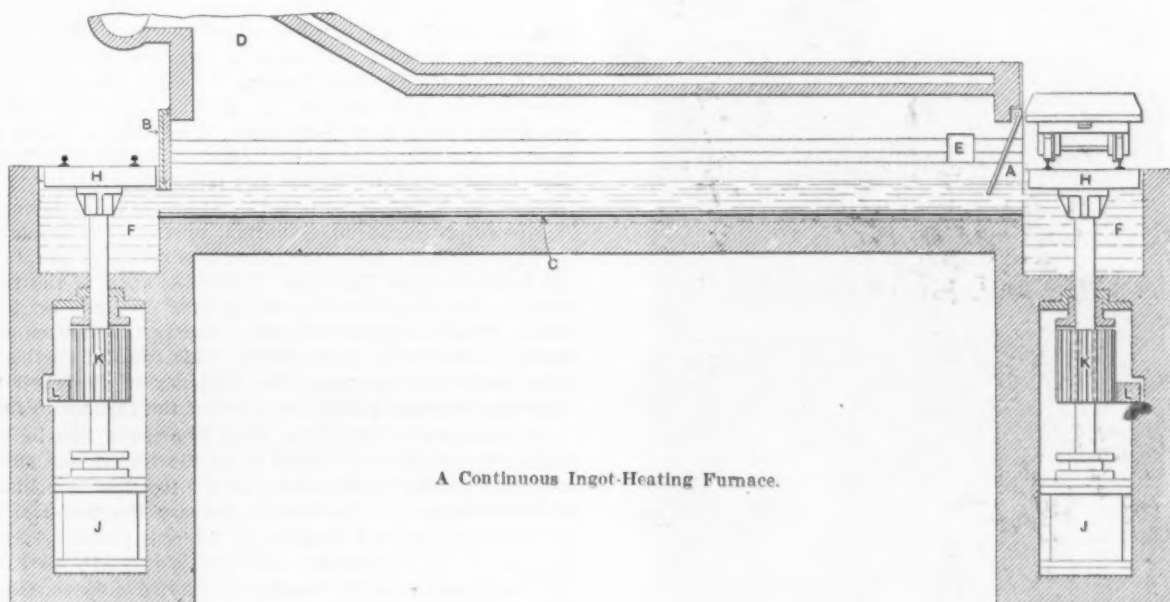
On June 29 the total working force on the Panama Canal was 23,327. The June excavation in the Culebra division was 624,586 cu. yd., as against 669,365 cu. yd. in May, and is more than three times the amount taken out in June, 1906. The report says that with 19,000 yd. per shovel as the maximum output during the dry season, 16,000 yd. per shovel cannot be considered a serious falling off when the excessive rainfall (13.34 in.) for June is taken into account.

The Wilson Transit Company has closed a contract with the American Shipbuilding Company for an 8000-ton lake boat for 1908 delivery. The new boat will be 524 ft. over all, and will be a duplicate of the steamer Charles S. Hebard of the Wilson fleet.

A Continuous Ingot-Heating Furnace.

Wm. R. Miller has designed for the Forter-Miller Engineering Company, Pittsburgh, Pa., a water-sealed continuous ingot-heating furnace. Engineers have worked upon continuous soaking pits with more or less success, a conspicuous effort in this direction being that embodied in the original open hearth steel plant at Ensley, Ala. Some of the drawbacks connected with earlier attempts are now believed to have been overcome and the patent, granted to Mr. Miller in April of this year, represents improvements in one issued in 1906. Its features are shown in the illustration which is a vertical longitudinal sectional view partly broken away. At each end of the furnace is a swinging door, A, B, fitting down over the ingot buggy and closing the ends of the furnace against the entrance of air or the escape of the gases.

The lower portion of the furnace chamber for its full length is a water seal basin with a track, C, along the bottom. Gas and air are introduced in usual ways into the combustion chamber D, the products of combustion passing out through the outlet pipe E connected with the stack. At each end of the furnace is a supplemental basin, immediately beyond the end walls. In it is mounted on a piston rod or hydraulic ram a turn-



A Continuous Ingot-Heating Furnace.

table, H, provided with a track of the same gauge as that which traverses the furnace. The ram projects into the basin through a stuffing box and is actuated by a plunger mounted in a steam or hydraulic cylinder, J. On each piston rod is a pinion, K, which is of such length that it engages with a rack bar, L, at varying vertical positions. Thus the plunger and the turntable it carries may be given a one-quarter revolution. The construction of the supplemental basins is such as to permit of lowering the turntables H until their tracks align with the track C traversing the furnace bottom, or of raising the turntables above the water line to align with the tracks, at right angles to the track C, on which the ingot buggies are run on or off the turntables.

The buggies follow each other continuously through the furnace, the entire lower portion of each being submerged while the upper portion carrying the ingots is exposed to the furnace gases. The end basins and the furnace basins furnish a continuous water seal.

There has been issued in pamphlet form an article originally published in the *Political Science Quarterly* on "Iron and Steel Bounties in Canada," by Edward Porritt of Hartford, Conn. It is an admirable historical review of this curious movement, with a lucid exposition of the considerations which led to the rapid increase in the sums expended in recent years, with men in power who were originally violently opposed to it.

Coal in Alabama in 1906.

The United States Geological Survey, through E. W. Parker, fuel expert, reports that the total production of coal in Alabama in 1906 was 13,107,963 net tons, having a spot value of \$17,514,786. Alabama ranks fifth among the coal producing States. The output in 1906 was its largest, being 10.5 per cent. greater than that of 1905. The average price per ton advanced from \$1.21 in 1905 to \$1.34 in 1906. The total number of men employed in the coal mines of Alabama in 1906 was 20,555, who worked an average of 237 days, as compared with 19,595 men for an average of 225 days in 1905. The average production per man in 1906 was 638.2 tons, against 605.6 in 1905. The average output per day per man was the same in both years—2.69 tons. In 1904 the men averaged 2.93 tons per day and 632.3 tons for the year. The effects of the strike of 1904 appear in the outputs of the past two years, with nonunion men largely employed.

According to the report for 1905 there were 213 machines in use and 1,584,942 tons of machine mined coal; in 1906 there were 232 machines in use, an increase of 19, while the machine mined coal increased to 1,616,436 tons. Strikes occurred last year at only four mines and were of short duration. In mines employing 11,258 men,

or nearly 55 per cent. of the total number for 1906, a 10-hour day is in force; 37 mines, employing 7808 men, worked 9 hr., and 27 mines, employing 1096 men, worked 8 hr.

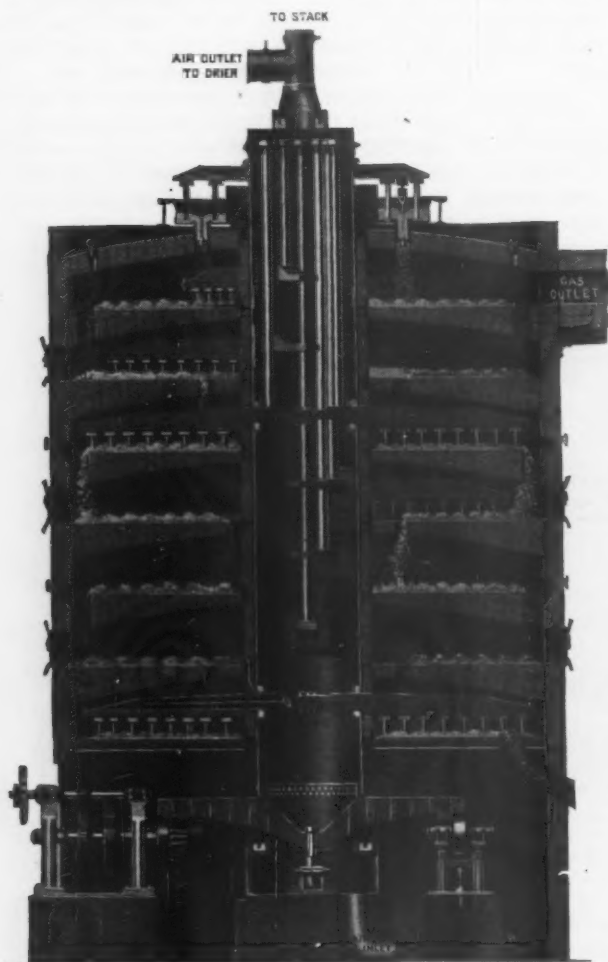
Of the total production of coal in Alabama in 1906 over 15 per cent., or 1,985,889 net tons, was washed at the mines, washeries having been installed at 11 mines. These 11 washeries operated 38 rigs, and the operations resulted in the production of 1,753,537 net tons of washed coal and 232,352 tons of refuse. These statistics do not include the coal washed for coke making at plants located at a distance from the mines.

The E. H. Mumford Company, Philadelphia, Pa., manufacturer of molding machines, announces that it has taken the exclusive agency for the Bonvillain-Ronceray universal system of machine molding, including the hydraulic power molding machines of the French firm; also its rapid and inexpensive method of making stripping plate patterns, as well as its cliché process for patterns which are not stripped. The Bonvillain-Ronceray system was described in *The Iron Age* of June 6, in the reproduction of a paper by E. Ronceray, read before the Philadelphia convention of the American Foundrymen's Association in May.

The New England Foundrymen's Association will have an outing at the Squantum Club, Providence, R. I., August 15, under the management of Providence members.

The Wedge Ore Roasting Furnace.

An improved furnace for roasting pyrites fines, sulphuret ores, zinc blende and for chloridizing and chlorination, designed by Utley Wedge, is built and sold by the Pennsylvania Salt Mfg. Company, Philadelphia, Pa. This furnace, a sectional view of which is given herewith, is of the well-known McDougal type, but has several new features. One of the most important is the hollow revolving central vertical shaft, which has a diameter of 4 ft., and affords access to the center of the furnace. This shaft is of steel, protected from the flames by an exterior covering of brick, which revolves with the shaft. The bricks are supported on cast iron rings riveted to the vertical shaft at the levels of the furnace floors, where



Cross Section of the Wedge Ore Roasting Furnace Built by the Pennsylvania Salt Mfg. Company, Philadelphia.

they protect the brick when workmen are spudding the floors.

The diametrically opposite arms which revolve with the vertical shaft are bolted together in its center where the fastenings are not exposed to the furnace flames. The only machine work necessary on the arms is at the joint where they are fastened together. The hollow arms where they project into the furnace are cooled by an interior circulation of air delivered to them through the shaft by a fan. The air enters through openings in the under sides of the arms, just inside of the shaft shell, passes to the outer extremities under an interior diaphragm, then back over the latter and out through the tops of the arms inside of the shaft. The outlets are connected by standpipes, so that heated air cannot enter other arms, but must pass out through the top of the vertical stack. A hood connects these flues, making it impossible for air to escape from the shaft except through the arms and the attached flues. Water can be used for cooling if desired, practically the same plan being followed. If air is used, as shown in the engraving, the air is compelled to enter the vertical shaft by a hood and lute underneath the large gear at the bottom of the fur-

nace, the lute being sealed with water. The heated air can be exhausted from the top hood directly to the atmosphere through a stationary vertical stack or to a louver board dryer through a branch pipe, and dried before being led to the feed tank on the top of the furnace.

The openings in the shell of the shaft through which the arms pass are made tight by cast iron lutes filled with fine asbestos, and inasmuch as an air pressure of a few ounces is maintained on the interior of this shaft, should any leakage occur around the arms its course would be from the shaft to the combustion chambers. No machine work on the arms is necessary to make a tight joint.

The rabble blades are fitted into holders on the arms, as shown in the illustration. They may be readily removed from the holders by reaching in from the exterior of the furnace through doors provided for that purpose, and can be slid from the fastenings by a hook. In classes of work where the rabble blades and holders, which may be removed together, do not corrode, only the blade requires to be replaced when worn out, while the holder can be maintained in service for a long time. The arrangement of the rabble blades is an improvement over an earlier one invented by Mr. Wedge, in which the blade and holder were one casting. This later method, where a new blade alone is required, obviously reduces the expense of repairs.

The vertical shaft of the furnace, together with the arms, is entirely supported by roller bearings underneath the furnace, so that only a pin is required at the center and the customary step bearing is not necessary. Six heavy rollers carry the weight, and the shaft and arms are rotated by a bevel gear drive. The driving pinion is loose on the shaft, but is compelled to rotate with it by pins, which shear off before any mechanical part of the furnace can be subjected to sufficient strain to do damage. The power required under normal operation is so small that a shear pin 3-16 in. in diameter is sufficient to rotate the furnace under full load. The outer shell of the furnace is $\frac{1}{2}$ -in. steel, and is constructed of eight vertical sheets, with no horizontal seams; the vertical seams are doubly riveted with $\frac{3}{8}$ -in. rivets. This form of shell has been adopted to overcome the tendency of the shell to bulge, and thereby permit any part of the furnace to fall.

In furnaces of this type there is often a loss in capacity where material is fed in at the top at one point only, and usually but one-third of the top floor is utilized in consequence. In the Wedge furnace the material is fed into the top at a number of different points. For a furnace 20 ft. in diameter six feed spouts are used, so that the material is evenly distributed. Four short arms are attached to the vertical shaft above the top arch of the furnace in an annular bin into which the material is first introduced. Here it is evenly spread out by plow blades attached to the short arms. On each arm there is a knocker which successively engages each of the six feeders, as shown in the engraving, thus momentarily opening the feed valves, which are closed again by a counterbalance after the arm passes. The plow blades which immediately follow shove more material into the spouts, keeping them sealed against the escape of gas from the furnace.

As the material roasted works down through the furnace alternately from and toward the center on succeeding floors, it is met by the ascending current of air and combustion gas, as in other furnaces of this type. Under certain conditions this tends to flux the material as it passes through the drop holes in the floors, causing it to clog and accumulate. To readily remove these obstructions the furnace is provided with poke holes through which the drop holes can conveniently be kept open and clean. The drop holes near the center of the furnace are always accessible through the larger doors, while those on the top floor can be reached from poke holes in the roof.

The capacity of the 20-ft. furnace, when roasting sulphuret ores under the conditions that prevail at the Western smelters, is from 70 to 85 tons per 24 hr. The capacity of the same furnace roasting pyrites fines under the conditions necessary for the manufacture of sulphuric acid by the Chamber process is from 12 to 18 tons in 24 hr., according to the sulphur content of the

finer. This unusually large capacity is secured by utilizing the full capacity of the top floor of the furnace, and making the furnace of large diameter. The large diameter of the central shaft gives such a convenient and substantial means of securing the arms in the shaft that the objections to a furnace of large diameter are removed, and although the area of the shaft with its brick work is 15 sq. ft., the additional area secured in the remainder of the furnace, if it is 4 ft. greater in diameter than ordinarily, is 113 sq. ft. for each floor of the furnace; and as the furnace has seven floors the total area of a 20-ft. furnace of this type is nearly 1800 sq. ft. It therefore has four to five times the area and capacity of the McDougal furnace used in the Southern States, and from 30 to 50 per cent. greater capacity than the McDougal furnace used in the Western smelters. The advantages of this large capacity are apparent when the following features are considered:

A plant of 10 12-ft. furnaces, for example, would require a building approximately 114 ft. long by 53 ft. wide, if they were placed in two parallel rows. The same capacity could be secured by two of these large furnaces, which, allowing for ample clearance on all sides, would call for a house 69 ft. long by 44 ft. wide. The saving in the cost of the building should offset the additional cost of the larger furnace.

Also the centralizing of the work in the larger furnace greatly simplifies the economical handling of the material to and from the furnaces. Where these large furnaces have been installed the handling of the material has been accomplished with great economy as compared with the cost of installing and operating appliances for handling the material to a large number of units. When it is further considered that this furnace is claimed to suffer less loss of capacity by reason of stoppages than the smaller and more lightly constructed furnaces at present in use, there appears to be little in favor of the small units.

One of these furnaces is stated to have ample capacity to operate a set of acid chambers of 200,000 cu. ft. capacity. A test was recently made of two of these furnaces when in operation roasting cuprous iron pyrites fines, in connection with the manufacture of sulphuric acid. The furnaces tested were 20 ft. in diameter and each furnace was roasting at the time 12 tons in 24 hr., or 24 tons for the two furnaces, and the power consumed by the two furnaces was only 3 hp. One No. 6 Sturtevant fan was used for circulating air through the arms of the furnaces and required 5 hp. more.

The inventor of this furnace, Utley Wedge, was also the originator of the application of the muffle principle to the furnaces of the McDougal type, and some years ago was allowed very broad claims covering the application of this principle. One form of the furnace is similar to that illustrated, except that it has only one working floor and a muffle both above and below this floor. This style of furnace has been constructed 32 ft. in diameter, and has a capacity when used for chloridizing ore of from 75 to 80 tons in 24 hr. This furnace has also been used in the chloridizing of cuprous ore. Most of the details of its construction are similar to that of the 20-ft. seven-floor furnace described, except that the arms are cooled with water instead of air. This furnace construction is protected by patents in Germany, England, Belgium, Norway, Sweden, France, United States and other countries.

In a recently published description of the mineral deposits it controls in northern Virginia the Appalachian Conduit Company, Washington, D. C., refers to that portion of its lands containing brown hematite ore. The ore measures, it is said, start near the Harrisonburg branch of the Southern Railway, crossing its Bluemont division and extending to the Potomac River, in the County of Loudoun, opposite Washington Junction. To reach the ores it would be necessary to build a railroad north from Harrisonburg, the southern end of the deposits being 4 miles distant. The ores are said to carry 45 per cent. metallic iron and to exist in lenticular pockets of vary-

ing extent. The district is about a mile wide and 30 miles long. In the early forties ores from this district were transported as much as 25 miles in wagons to furnaces. Mention is made of the existence in the same district of a large body of alumina silicates carrying a small percentage of calcium and represented as proving satisfactory as a flux.

Dr. Day Is Relieved.

Dr. David T. Day, chief of the Division of Mining and Mineral Resources of the United States Geological Survey, has been relieved of duty at his own request to enable him to devote his time to the preparation of the report on the petroleum resources of this country for the United States government. Dr. Day has always been closely interested, as a chemist and a statistician, in the petroleum industry and will now devote all his energies to it.

Dr. Day graduated from the Johns Hopkins University in 1881. His graduation thesis was on the question of petroleum. Five years later he became the chief of the Mining and Mineral Resources Division, and he has remained in this department continuously for 21 years. Dr. Day's most important work, perhaps, since he entered the service of the government, has been as compiler of the mineral resources of the United States. This work he took up in 1885, and he has been at the desk ever since.

During the World's Fair, at Chicago, in 1893, Dr. Day was in charge of the petroleum exhibits. At the Paris Exposition he also had charge of the petroleum exhibit. At nearly all of the expositions in this country and abroad during the last 15 years he has been sent as representative of the United States government and the Geological Survey. He was honorary commissioner of mining at the Lewis and Clark Exposition at Portland, Ore., during the summer of 1905, and was active also in connection with the mining exhibit at the Jamestown exhibition.

Edward W. Parker

has been designated as his successor with the title of Statistician in Charge. Mr. Parker, who is a native of Texas, has been in the service for 16 years, and has been conspicuously identified with the coal and coke industry. He was a member of the Anthracite Coal Commission.

The order issued by George Otis Smith, the director of the Survey, states:

"The plan of co-ordinating administrative control and scientific supervision adopted in the Division of Geology and Paleontology has proved so satisfactory that it seems advisable to extend it further in the Geologic Branch. At the present time two sections will be established in the Division of Mining and Mineral Resources to provide for such scientific supervision of the work of the division.

"1. Metalliferous ores, except iron, in charge of Waldemar Lindgren.

"2. Non-metalliferous minerals, and iron, in charge of E. W. Parker.

"Mr. Lindgren's connection with the work of this division has already contributed much to the increased value of the report, and the new form of organization here outlined is merely the recognition of an actual condition.

"The section chiefs are expected to confer freely in planning for the work of the division, and for the execution of these plans, as approved by me, Mr. Parker as the administrative chief will be responsible."

It is now officially announced that the Subway extension from the Battery, New York, to the Borough Hall in Brooklyn, will be ready for operation in October. The work of bringing back to true grade the parts of the tube under the East River which were flattened for want of proper support has been completed, and the weak spots in the tunnel have been strengthened by piling beneath the tubes. Practically all that now remains of the tunnel work is the cleaning out of the tubes.

A New Mueller Radial Drill.

The mechanical means for changing speeds and feeds are the features of most interest in the new radial drill built by the Mueller Machine Tool Company, Cincinnati, Ohio. There are 24 changes of spindle speed and eight changes of automatic feed to each spindle speed, any of which can be instantly obtained while the constant speed driving pulley is in motion. It is claimed that the changes are made without noise or shock, and being entirely gear driven they are positive. The two long levers shown in front of the speed box in the general view, Fig. 1, control four changes of speed, and to prevent accidental misuse of these handles they are interlocked by the small locking lever between them, so that it is possible to move only one lever at a time from its neutral position. A sectional view is given in Fig. 2 of the gear box, showing the gears, shafts and friction clutches. The latter are operated by the long levers referred to and cause the driving shaft to drive the intermediate shaft, which in turn drives the upper shaft in the speed box. The small lever on the right side of the speed box is used to bring the gears *a*, *b* and *c* in mesh with the gears *d*, *e* and *f*, respectively, on the intermediate shaft, and three more changes of speed are obtained for each speed of the first driven shaft, making 12 changes of speed possible up to this point. This range is doubled by throwing the back gears in or out, which are located on top of the

imposed, particularly when the arm is at the top of the column and the spindle at the outer end of the arm. The arm is of hollow rectangular section, stiffened by an upper brace close to the face carrying the spindle head and a lower brace almost diagonally opposite, near the rear face. It will be appreciated that this provides admirably for resisting upward pressure of the spindle

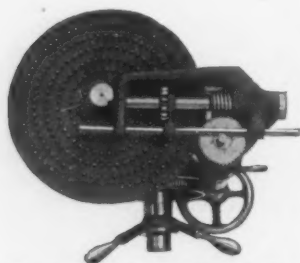


Fig. 3.—Top View of the Spindle Feeding Mechanism.

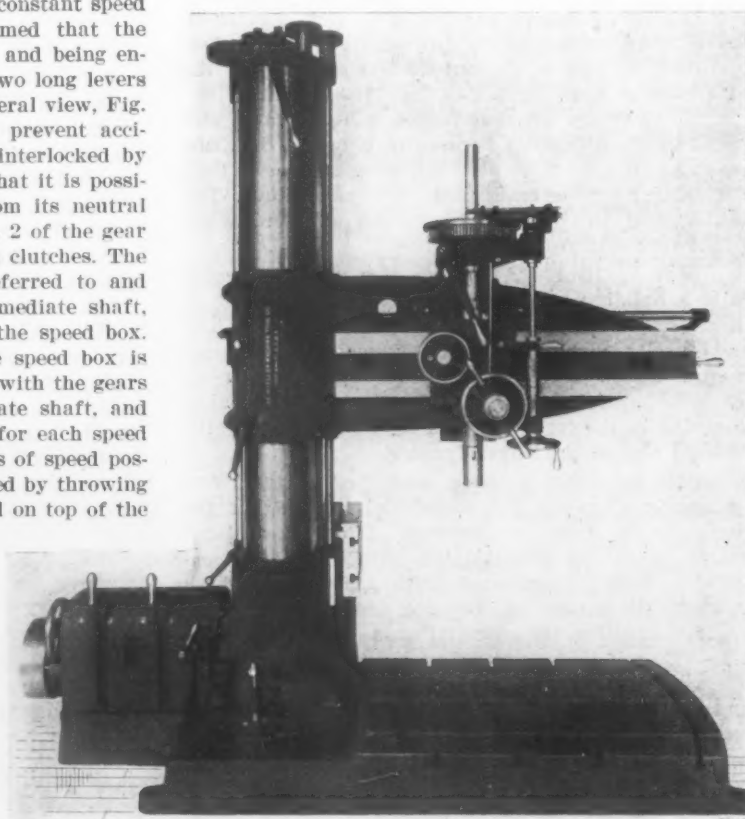


Fig. 1.—A New 4-ft. Radial Drill Built by the Mueller Machine Tool Company, Cincinnati, Ohio.

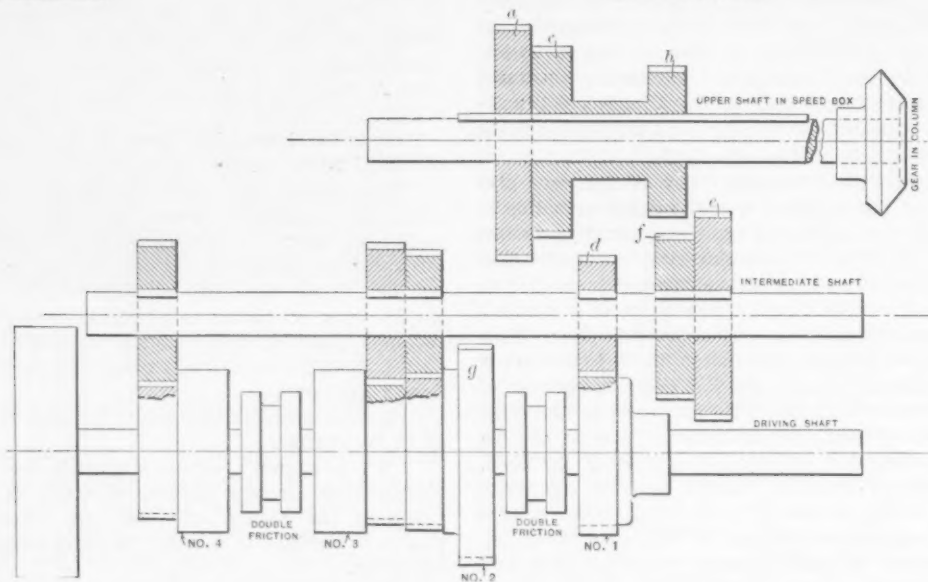


Fig. 2.—Diagram of the Speed Box Gearing in the New Mueller Radial Drill.

column, and are operated by the lever shown at the base of the column in Fig. 1. This lever is also used to bring the gear on the center shaft in mesh with the gear on the elevating screw when required. When the elevating screw is reversed while lowering the arm the gears *a* and *g* (Fig. 2) in the speed box are engaged without any intermediate gear, which causes the upper shaft in the speed box to reverse at an increased speed.

The column is in one piece, is bolted to the base and does not revolve. It is of heavy section throughout and is reinforced by four inside webs extending its entire length, making it capable of resisting the heavy strains

when drilling, by preventing twisting of the arm. A top cap resting on roller bearings supports the arm, and both may be swung completely around the column or instantly locked in any position by binder levers. The arm is lowered at almost three times the elevating speed by a screw having ball thrust bearings.

The spindle is of crucible steel and is ground. It is counterbalanced, has quick advance and return and provision for taking up wear. For tapping it is stopped, started and reversed by the long lever shown in front of the head, which operates two self-adjusting noiseless friction clutches that are located on back of the head.

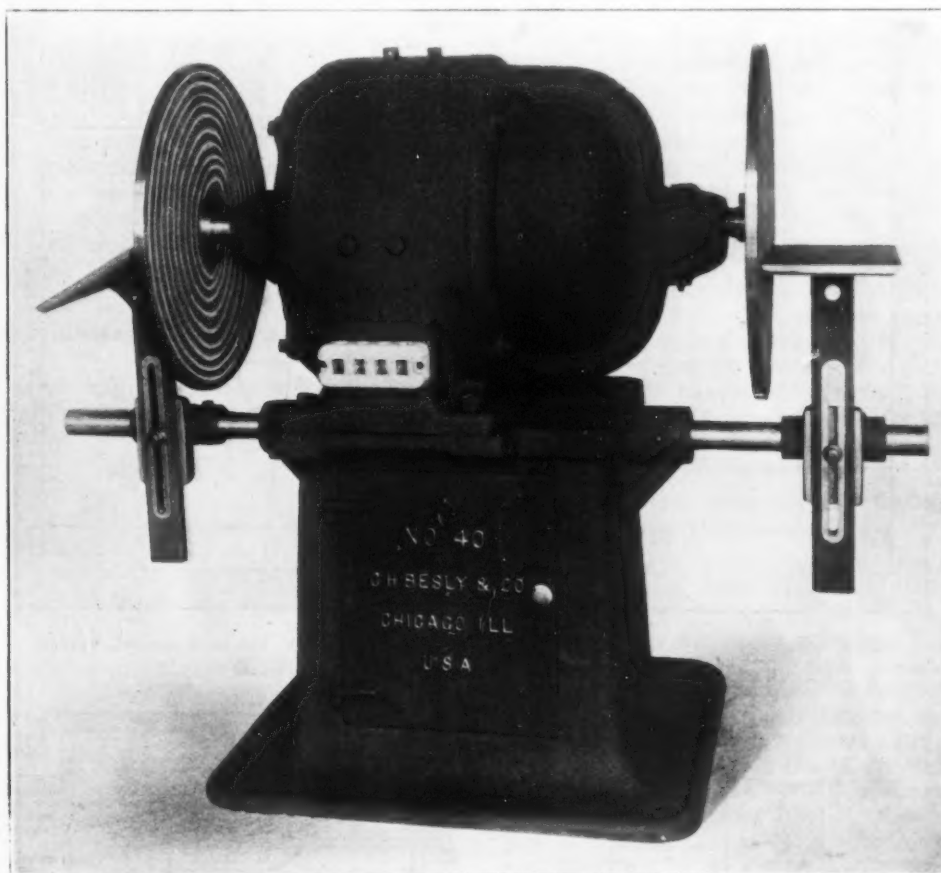
At such times it is impossible to accidentally engage the automatic lever feed. This guards against breaking taps, as does also an adjustable gauge nut, which causes the spindle to slip when a tap reaches the bottom of a hole.

A positive automatic feed is provided for the drill spindle when high speed drills and reamers are in use, or a friction feed may be used when desirable. The change from one to the other is easily made by simply turning a nut. An ingenious mechanism, shown in Fig. 3, accomplishes the changing of feeds. A round plate having eight circles of steel pins is located above the spindle gear, and the pins engage with a steel involute toothed pinion, feathered on a horizontal shaft, which carries a worm to transmit the feeding movement. The speed of this shaft is varied by means of a knob below the lower hand wheel. This knob is fastened to a rod which extends through the center of the vertical feed shaft, and has teeth cut on its upper end to engage

its silica brick, as well as the fire brick of the Olive Hill Fire Brick Company for the Central West, will be made under the management of E. M. Allen, vice-president and general manager of the American Refractories Company, and J. H. Cavender, sales agent of the same company, who will also be located at this office.

The Besly No. 40 Plain Motor Driven Grinder.

One of the largest motor driven disk grinders ever built is the one illustrated herewith, a No. 40, with 26-in. disk wheels, as made by Charles H. Besly & Co., Chicago, Ill. It is driven by a 20-hp. General Electric direct current motor, which in itself weighs 1 ton. The weight of the complete machine, including motor and accessories, is about 3800 lb., and the operating floor space required 5 x 7 ft. With the machine are furnished four 26-in. diameter patent spiral grooved disks, a floor setting up press for applying emery cloth or paper circles to the



The No. 40 Motor Driven Grinder Built by C. H. Besly & Co., Chicago.

with a sliding rack and move the steel pinion into engagement with any desired circle of pins for fast or slow feed. These eight changes of feed may be quickly made while the drill is at work. The upper worm wheel has a split hub, and by means of a ring nut can be locked to the vertical feed shaft for positive feed, or slightly released if friction feed be required.

The automatic trip is provided with a safety stop, which prevents the feeding of the spindle after it reaches the limit of its travel. A graduated bar on the counter-balance weight is set to zero when the drill enters the work, and by means of several adjustable dogs on the bar the feed may be tripped as often as desired; these do not interfere with the spindle travel. The feed can also be tripped by a lever on the vertical feed rod.

Letters and numbers cast near the various levers on the machine indicate to the operator what levers to move and in what direction to move them for proper speeds, which are given on a bronze plate fastened to the arm.

The American Refractories Company has established its general sales office in the Commercial National Bank Building, Chicago, Ill. Through this office the sales for

disks, Helmet cement for securing the circles to the disks, Helmet oil, glue pots, brushes, wrenches, &c., and a complete assortment of Helmet spiral paper and cloth circles of a suitable grade for the work to be ground. Tables of the adjustable tilting type used on the other Besly grinders are fitted to this machine, one at each end. The tables have vertical adjustment and may be tilted from 10 to 45 degree angles. A controller and starting box is placed in the base of the machine and may be reached by opening the door shown in the illustration. The speed of the machine may be varied according to the metal to be ground. For general work 1200 rev. per min. is recommended.

Iron mines are to be developed at Waukon, a small town near Prairie du Chien, Wis. The St. Louis Iron Company has put a force of men at work excavating for foundations for four large roasters and a 400-hp. engine. The location is a mile west of the village of Waukon Junction on the tracks of the Chicago, Milwaukee & St. Paul Railroad. Estimates by experts place the amount of ore in sight at 75,000,000 tons, and it is said to run well up in metallic iron.

The George N. Pierce Company's Gas Plant.

BY DR. OSKAR NAGEL.

Cold producer gas after being purified is suitable for heating purposes in the arts where only moderate temperatures are necessary. If high temperatures are to be obtained the combustion air and the producer gas hereto-

The plant, shown in plan in Fig. 1 and in diagrammatic or developed elevation in Fig. 2, consists of two gas producer sets, each comprising a generator, saturator, wet scrubber and dry scrubber, and one Acme gas outfit, containing three generators, which hold the distillate, and four gas tanks, which serve as drip tanks. Generator No. 3 of the Acme gas plant is used for enriching the producer gas, which after the enrichment is called Acme producer gas. In the generators Nos. 1 and 2 air is

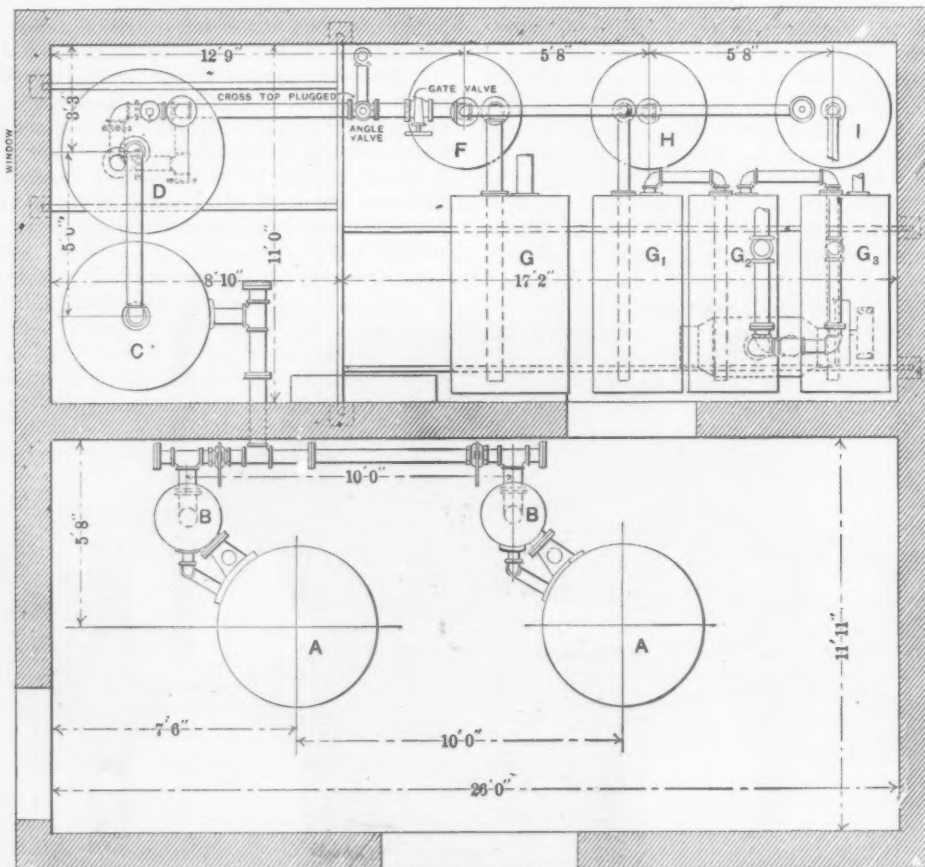


Fig. 1.—Plan of the Producer and Acme Gas Plants in the Geo. N. Pierce Company's Factory.

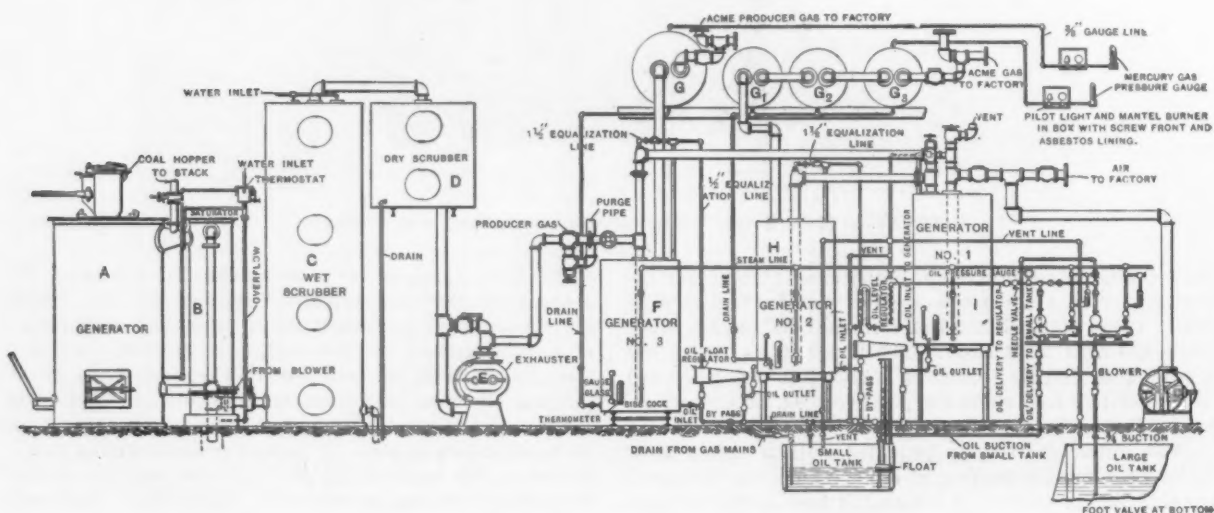


Fig. 2.—Developed Elevation of the Equipment Furnished by the Industrial Gas Company, New York.

fore have had to be either preheated or supplied under high pressure. Now a new scheme has been developed for increasing the thermal value of producer gas by enriching it with hydrocarbons, raising the heat in a cubic foot of the gas from 130 to 160 B.t.u. The enriching is done by blowing the producer gas through distillate, as in the Acme gas system of the Industrial Gas Company of New York. An extremely interesting plant of this kind is in operation at the new automobile factory of the George N. Pierce Company, Buffalo, N. Y.

blown through the distillate, forming plain Acme gas, which is rich in hydrocarbons and of high thermal value. This gas is used for such work as requires an extremely high, quick and local heat.

The producer gas is formed in the generator A, travels through the saturator B, where it preheats the steam and air supplied to the generator, goes then through the wet scrubber C, where the main impurities are washed out, passes next through the dry scrubber D, where the last traces of dust and tar are removed, and finally is passed

by the blower E to the oil generator F, where it is enriched by going through heated distillate. Finally the Acme producer gas is led through the drip tank G to the furnaces.

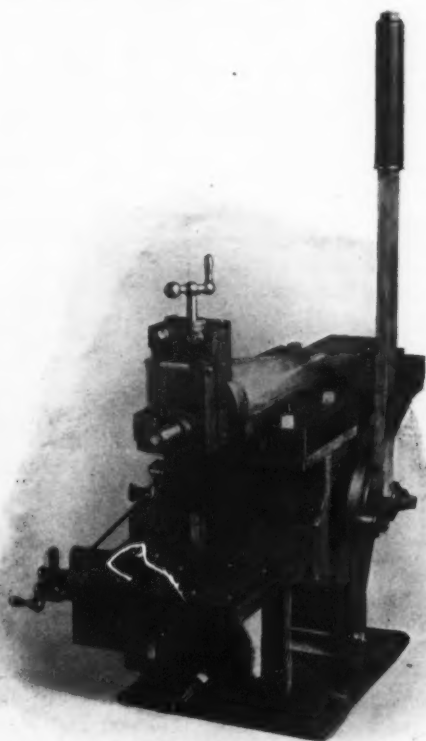
The Acme gas is made by blowing air through heated distillate contained in generator I. For further enrichment the gas so obtained is led through generator H, which also contains distillate. The Acme gas now goes through the drip tanks G₁, G₂ and G₃ to the furnaces. As can be seen from Fig. 2, it is also possible to connect the generators I and F for the purpose of making Acme gas, instead of using the combination of generators H and I.

The gas is used in the Pierce factory principally in the case hardening department and brazing department. The furnaces used in the case hardening department are the standard types made by the American Gas Furnace Company. There are in operation two case hardening furnaces with 12 burners each, two case hardening furnaces with six burners each, one case hardening furnace with six burners, one oil tempering furnace with one burner, one cyanide hardening furnace and eight lead hardening furnaces. Enriched producer gas is used in all of these furnaces. In the brazing department pipes, gear casings and other automobile parts are brazed. For this work the plain Acme gas is used, being applied by means of blow torches.

The Pierce Company is also using gas in its adjustable tire heaters and for heating soldering irons and for melting Babbitt. The entire gas plant was designed, erected and put in operation by the Industrial Gas Company, Flat Iron Building, New York City.

The Malterner Hand Shaper.

Machine shops with power have so monopolized the thought of machine tool designers that very little attention has been given to improving means for hand work,



A Hand Driven Shaper Designed by S. N. Malterner, Canton, N. Y.

and as a result hand operations are performed in about the same way now that they have been for generations. No one heretofore has seemed to think of anything better than the cold chisel and file, short of some power driven tool. The simple device illustrated, a hand operator shaper, is therefore deserving of mention as practically the first attempt made to better the conditions in the small repair shops where power is not available. In con-

ceiving the idea, the inventor, S. N. Malterner, Canton, N. Y., deserves most credit, for when the machine itself is analyzed there will be seen to be nothing remarkable or radically new in its mechanism. It is simply a sensible combination of perfectly well known mechanical principles, and the illustration tells the whole story.

Except for the drive it is merely a compact shaper of the usual pattern reduced to its simplest form. A completely rotary motion of the driving shaft is not necessary; in fact, it would be undesirable, so the reciprocating ram movement is effected in the most direct way by meshing a segment gear on the operating shaft with a rack on the underside of the ram. The down feed of the tool is by the usual screw, and is independent of the stroke, but the cross feed of the table is connected, so that an adjustable automatic feed is given the table during the operation of the hand lever.

Naturally the tool will find its greatest usefulness in garages, toolrooms, steamship engine rooms, roundhouses and bicycle or other repair shops, although it is not without its value in almost any machine shop on certain small work. It does the work of a powerful machine. It perhaps is somewhat slower, but that disadvantage might easily be offset by a saving of time if it were necessary to carry the work to another department where power tools are installed, or if all of the latter were otherwise occupied.

The accuracy of the machine was determined in a test in which a strip 7 in. long was cut with parallel edges; in this length there was a variation of only 0.0005 in. from true parallelism. A considerable leverage is given, and still this tool requires less labor than to file at a vise. The machine will take a block 8 in. long, 8 in. high and 7 in. wide, and will make a cut 1-16 in. deep in tool steel, and do it easily. It weighs 150 lb., and may be bolted directly upon a bench.

The inventor has placed the tool on the market, and it is manufactured by the Burke Machinery Company, Cleveland, Ohio.

Electric Smelting in California.

R. I. Phelps contributes an article to the *Mining and Scientific Press* of San Francisco on the Héroult furnace plant erected at Héroult on the Pitt River about six miles from its confluence with the little Sacramento River, Shasta County, California, and about eight miles from the town of Kennett, on the Southern Pacific Railroad. The enterprise was originated by H. H. Noble, president of the Northern California Power Company, to treat the magnetite ores found on the divide between the Pitt and McCloud rivers. The current available is three-phase 60-cycle alternating current, which has not thus far been used in electrical smelting. Three carbon electrodes, each 18 x 18 x 72 in., are used. The water cooled step-down transformers deliver to the electrodes 30,000 amperes at 50 volts 60 cycles from the 22,000 volt potential of the power transmission line.

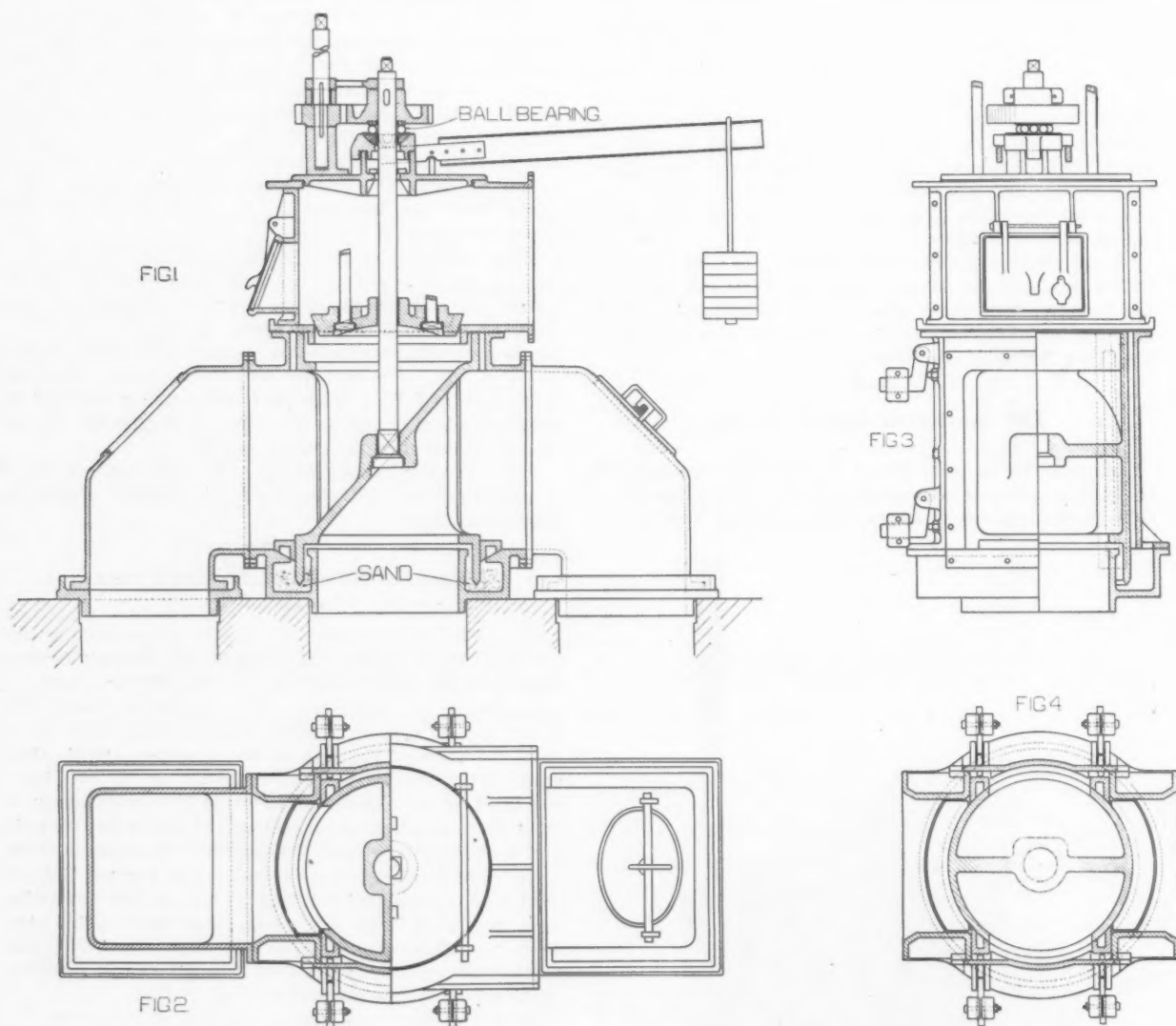
The first heat was started on July 4, but after 3½ hours trouble developed with the centrifugal pump used for delivering water for cooling the transformers and electrode holders, and the heat had to be stopped. Another intermission was caused by the clogging of a charging tube, and just as this was being corrected the power line was broken by careless blasting on the right of way of the Sacramento Valley and Eastern Railway, which is being built from the Bully Hill copper smelter to the Southern Pacific Railroad. The latest advices to the editor of the *Mining and Scientific Press* are that smelting had been resumed and the first heat tapped.

A course of evening instruction in steam engineering has been a feature of the educational department of the Twenty-third street Y. M. C. A. of New York City for the past two years. About 75 men have taken advantage of the course. Another class will be organized in October, to continue until June. Two years are required for the completion of the prescribed study. Considerable equipment has been installed for the use of students in this course.

The Fischer Gas Reversing Valve.

A very important detail of gas fired furnaces is the gas controlling or reversing valve. Most valves now used, it is stated, are wasteful and inefficient and fail to meet the severe demands of modern steel and glass works practice. The ideal valve is one that will not leak, that will permit simultaneous closing of gas and chimney flues, that can be maintained in continuous service without repairs and that is easily operated. If these four characteristics can be realized in a valve without troublesome complications the result will be an increase in production and a decrease in fuel consumption. In the Fischer reversing valve, herewith illustrated and built by the Taylor-Wilson Mfg. Company, Pittsburgh, Pa., it has

balance weight, as shown in the sectional elevation, Fig. 1. At the bottom the rim dips into the packing of sand or asbestos which fills the pan. At the circumference the leakage of gas is prevented by sealing strips and segments pressed against the surface by counterweights, as shown in the plan, Fig. 2. All these points are permanently tight, as the counterweights make them self-adjusting. The cylinder is suspended by its shaft on a ball bearing and floats freely, thus allowing liberally for expansion. Warping is not detrimental to the effective action of the valve, for the self-adjusting packing prevents gas from escaping either during reversals or while at rest. The loss of gas by leakage directly to the stack, so common with butterfly valves, is totally avoided in the Fischer valve, by purely mechanical means which are



The Fischer Gas Reversing Valve Made by the Taylor-Wilson Mfg. Company, Pittsburgh, Pa.

been the aim to meet the above specifications. Important features of the valve are that it can be installed in the place of most other designs of valves without change in the arrangement of flues, that no water is used for sealing or cooling (the objection to water is that its contact with the gas not only cools it but adds to it more or less vapor which is carried into the furnace, where it reduces the heat efficiency and disintegrates the brickwork), and that the reversal is performed by one element and is mechanical and positive.

As shown in the illustrations, the Fischer valve consists of an inner cylinder with a diagonal partition, an outer casing with flue connections, like the Siemens valve, and a pan. The partition in the cylinder isolates the two continuous passages, one from the gas flue to the furnace and the other from the furnace to the stack. A half turn of the cylinder reverses the flow of the gases. The cylinder is sealed above by the pressure against the rim of the gas box, contact being maintained by the

simple, automatic and continuous in their action, regardless of the position of the valve.

The second characteristic of the ideal valve is very important, for unless the furnace and chimney are disconnected when the gas is shut off cold air is drawn through the furnace, chilling the heat and cooling the brickwork. The loss occasioned by the reduction in temperature is more pernicious than is usually considered. The Fischer valve closes the passages to and from the furnace simultaneously, and at a quarter turn both flues are shut off, as may be seen in Fig. 4. The heat in the furnace is retained, while the flues hold enough gas to supply the ports. Turning farther, the valve opens at the other side and the gas, which in the meantime has been accumulating in the producer flue, rushes in with increased pressure and fills the ports instantly. This feature is unique and it is claimed can be found in no other valve. During the reversal of most other types of valves the draft not only carries away the gas in the

chambers, but also that in the producer flue, which results in a double loss. The furnace does not receive any gas, but receives cold air instead. The pressure in the producer flue drops, and after the reversal it requires some time for the gas to fill the chambers. In other words, the heat is intermittent, instead of being continuous. The benefits of the simultaneous closing device are also apparent for longer periods of gas shut off. For example, while making bottom and Sunday rests, the furnace is kept hot for the reasons already given and starts up quickly again.

The Fischer valve is substantially built, with heavy castings provided especially to meet the severe conditions in steel works. Parts exposed to extreme heat are made from a special grade of cast iron found by experiments to withstand the heat excellently. The strong construction combined with the feature of unhindered expansion reduces the repairs. Some of these valves, it is claimed, have been in hard and constant service for three years without any repairs or renewals. Ease of operation is assured by the ball bearing which carries the rotating parts, and by the fact that jamming, sticking or gaping is made impossible through the floating and self-adjusting arrangement. The reversal is performed by hand with little effort, and expensive hydraulic and electrical appliances are unnecessary.

New Free Alcohol Regulations.

WASHINGTON, D. C., July 30, 1907.—The regulations for the enforcement of the new free alcohol law, passed at the last session of Congress to take effect September 1, 1907, have been completed by the Internal Revenue Bureau, and will be formally promulgated August 1. While they represent a long step forward in the direction of liberality, it is much to be regretted that the bureau experts have not been able to dispense with a great deal of superfluous phraseology, for the revised code, which makes 170 octavo pages, is nearly three times as voluminous as the original regulations, and in this respect at least will be disappointing to dealers and consumers who desire a simple, practicable and easily comprehensible set of rules.

The new regulations, which embrace amendments of the old code and new provisions for the execution of the supplemental law approved March 2, 1907, are divided into nine parts, as follows: 1. Denaturing bonded warehouses on distillery premises. 2. Industrial distilleries. 3. Central denatured bonded warehouses. 4. Tank and tank cars and pipe lines. 5. Dealers in and consumers of denatured alcohol. 6. Denatured alcohol used in manufacturing processes. 7. Alcohol recovered, restored and redennatured on manufacturers' premises. 8. Central restoring and redennaturing plants. 9. Duties of officers.

In an official synopsis, prepared by Chief Special Agent Gates, some of the important particulars in which the old regulations are modified are summarized. Manufacturers using completely denatured alcohol are not required to set aside a storeroom in which to keep the denatured product, but may keep it stored in locked tanks anywhere on their premises, or they may keep it in such rooms on their premises as can be secured, by locks, when the factory is not in operation. Dealers in denatured alcohol are not required to swear to application for permit, and a permit when secured continues in force until revoked, and will not therefore have to be renewed annually as heretofore. Retail dealers in denatured alcohol are not required to keep a record of any kind. They may purchase alcohol in stamped packages of 5 gal. or more, or they may purchase it in quantities of less than 5 gal., provided it is taken from stamped packages or duly authorized tank wagons. The provisions of the old regulations whereby druggists, who are also dealers in beverage alcoholic liquors, but who do not sell such liquors to be consumed on their premises, are permitted to sell denatured alcohol on their premises, is extended to grocers. The effect of this provision will be to permit druggists or grocers who do not operate regular saloons to sell denatured alcohol.

Provisions Under the New Law.

Under the new regulations, as under the old, regularly registered distilleries may construct denaturing

warehouses on distillery premises, but in addition the new regulations provide that central denaturing warehouses may be constructed and operated at such points as in the opinion of the Commissioner of Internal Revenue the business interests of the country may require. Proprietors of central denaturing warehouses may transfer thereto for denaturation other alcohol produced at their own distilleries or alcohol purchased by them.

Alcohol of 180 degrees proof or rum of 150 degrees proof may be transferred in barrels directly from distillery cisterns or from distillery bonded warehouses either to denaturing warehouses on distillery premises or to central denaturing warehouses, or alcohol for denaturation may be transferred through pipes or by means of tanks directly from cistern rooms to denaturing warehouses on distillery premises or to storage tanks in distillery bonded warehouses and thence by means of pipes or tanks to denaturing warehouses on the premises or to central denaturing warehouses. Likewise denatured alcohol may be transferred from denaturing warehouses by means of tanks or tank cars to consumers of, manufacturers using, or dealers in denatured alcohol.

The method of gauging either alcohol or denatured alcohol transported in bulk, that is to say, through pipes or by means of tanks or tank cars, under the new regulations is by weight. Weighing tanks may be established either in cistern rooms, distillery warehouses, denaturing warehouses, or on the premises of manufacturers using denatured alcohol or dealers in denatured alcohol.

Small Distilleries.

One of the most important features of the new regulations is that relating to the construction and operation of so-called industrial distilleries, *i. e.*, the small distilleries to be operated by farmers for the working up of their surplus crops, &c., authorized by the supplemental statute. These distilleries are divided into two classes according to whether they have a capacity of more or less than 50 proof gallons in 24 hours. The regulations permit these distilleries to be constructed in the simplest possible manner, one room being used as a combined cistern, distillery warehouse and denaturing warehouse. Continuous supervision of these distilleries is not required, but revenue officers will visit them at irregular intervals for the purpose of gauging the alcohol that may have been distilled and either supervising its transfer to central denaturing warehouses or permitting the distiller to denature it on the premises.

The Internal Revenue Bureau looks for a large increase in the consumption of denatured alcohol as a result of the new regulations and especially in view of the system authorized for distributing alcohol by tank car and tank wagon directly to dealers and consumers.

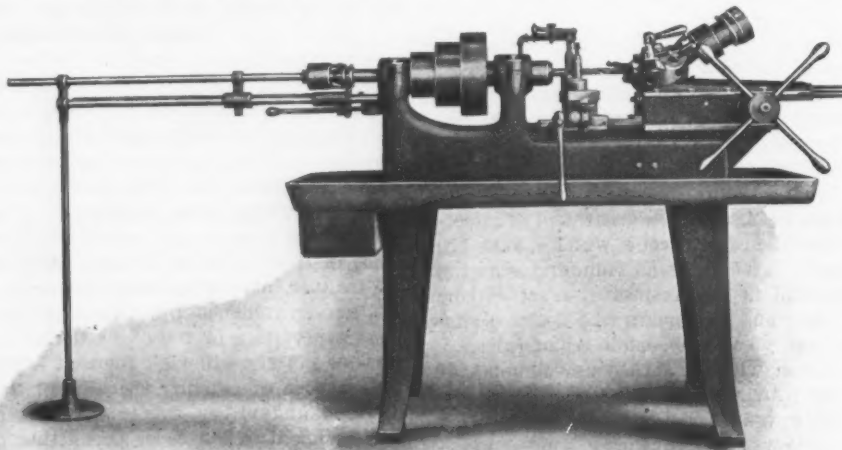
W. L. C.

A Departure in Typewriters.—If the extravagant expression, "a revolution in typewriters," were applied in announcing a new invention by Roy D. Parker, Goshen, N. Y., it would at least have foundation in fact from the nature of the movement which is the new feature. The letters, instead of being struck in a longitudinal line against a horizontal platen, follow one another around the circumferences of a vertical platen. The advantage gained is the avoiding of shifting the carriage at the end of each line, the only movement necessary being the raising of the platen the distance between lines. In a sense it may be called a rotary continuous typewriter, where all others are reciprocating intermittent typewriters. A simple depression of a key raises the platen one, two or three notches to give single, double or triple space, and the cylinder continues to rotate in the same direction, so that it is possible to write a whole page without removing the hands from the keyboard. To prevent the breaking of syllables at the ends of lines an automatic device moves the platen to the starting of a new line when the space bar is touched near the end of a line. For paragraphing, by depressing a certain key the platen is elevated and revolved to start a new line regardless of where the last line ended. The machine is a visible writer, and has a tabulating attachment. The patent was granted July 16, 1907, and a company has been organized to manufacture the new typewriter, known as the Parker Typewriter Company.

The Wood Tilted Turret Lathe.

It was the purpose in designing the machine herewith illustrated to produce a screw machine or a monitor lathe, with a turret capable of carrying tools of sufficient diameter to properly handle the work, and of allowing short box tools to be bolted to the face of the turret and still permit a long piece to be machined. The particularly unique feature is the turret, which is mounted on its slide rest at an angle of 15 degrees with the horizontal, so that the tools, being inserted in line with the spindle, are at an angle of 30 degrees with the horizontal when swung over the turret slide. It is therefore possible to use a tool two or three times the maximum diameter that might be used in a horizontal turret. The turret is hexagonal, and is fitted with holes and binder bushings for round shank tools, and has its faces square with the spindle for attaching tools. The machine is equipped with wire feed and self-oiling bearings. One filling of the chamber under the bearing will lubricate the machine for a year.

Another advantage of the tilted turret is that it allows the work to pass completely through the turret, a lower row of holes being provided in the turret for that purpose. As will be seen from the engraving the work may pass through the turret and back over the turret



The Wood Monitor Lathe or Screw Machine with Tilted Turret, Sold by Hill, Clarke & Co.

slide without interfering with a tool held in the hole above or on the rear face of the turret. The importance of this feature is that a long piece of work may be handled without using a tool having excessive overhang. An incidental benefit is that the pressure on the turret is not entirely transmitted to the center post of the turret, but is largely taken by the turret slide, which comes nearly on a line with the center of the spindle, thereby decreasing the tendency to spring the post.

Each hole of the turret has an independent stop shown at the rear of the turret slide, and by a new construction these stops are stationary—i. e., do not revolve with the turret, so they can be easily distinguished. The turret slide and saddle are adjustable by gibbs, both vertically and crosswise, to take up wear and preserve the turret alignment which is so important on the class of work handled.

The oil pan is large, and has a tank cast in the headstock end, with a pump to deliver the oil to the work. A double cut off rest is provided, having an extra long bearing on the bed with an adjustable gib. The countershaft is of the rim friction type, and the friction clutch has but four working parts. Both pulleys and bearings are self-oiling, and can be operated for six months steadily without attention.

The machine, as shown, takes 1-in. stock through the wire feed, and other sizes are now under process of construction at the factory. It is made by the Wood Turret Machine Company of Terre Haute, Ind., and is being put on the market by Hill, Clarke & Co., Inc.

Recent Customs Decisions.

Scrap Iron from Panama.

The Board of United States General Appraisers has dismissed, for lack of jurisdiction, a protest filed by the D. Kaufmann & Sons Company, Newark, N. J., in which the question is raised whether the Panama Canal Zone is domestic or foreign territory so far as imports into the United States are concerned. It appears that the company purchased 6,253 tons of old iron in the zone and shipped it to Newark, where the Collector of Customs exacted duty under the metal schedule, on the ground that the merchandise came from a foreign country. No question was raised as to the rate of duty assessed by the collector, the only contention being that the iron was not brought from a foreign country and hence is non-dutiable. The Government, through its legal representatives, objected to the Board considering the case, alleging that the lower customs tribunal has no jurisdiction to review a question of this kind. The Board adopts this view, and declines to make a decision in the case. It is reported that the protestants in the test case, and other interests handling second-hand material from the canal zone, will endeavor to obtain relief from duties which it is declared are illegal. It is understood that many contracts have been entered into for the return of material to the United States, and in none of

them was the payment of duties taken into account. If the authorities are unwilling or unable to grant relief in future importations, it is considered likely that some way will be found to bring the issue into the Federal courts for adjudication.

A Classification of Shapes.

The Walter W. Woodruff & Sons Company, New Haven, Conn., has been defeated in an attempt to secure lower duty on importations of iron bars or shapes. The articles are used principally in the construction of carriage and automobile bodies as a protection to the edge of the door and other exposed places. Duty was assessed at the rate of eight-tenths of 1 cent per pound. Objection was made by the importers to this classification, the plea being made that the articles are structural shapes within the meaning of the tariff, and as such entitled to entry at five-tenths of 1 cent per pound. In overruling the claim, General Appraiser Fischer remarks that the evidence fails to warrant a finding in favor of the importer.

The Japanese Government has set aside \$5,000,000 for an International Japanese Exhibition in Tokyo next year. The total cost is estimated at \$10,000,000, one-half of which has already been subscribed by private citizens. The exhibition is to open April 1 and last until October 15, and it is planned to make it the greatest the Orient has ever seen. Already construction work has begun. Some of the principal exhibits will be of a scientific character.

The Henry & Wright Radial Sensitive Drill.

Individually the fundamental principles of a radial drill and a sensitive drill are old, but the combination of the two ideas in a radial sensitive drill is said to be entirely new. A machine of this sort, a general view of which is shown in Fig. 1, is now built by the Henry & Wright Mfg. Company, Hartford, Conn., which makes a specialty of the already familiar types of sensitive drills. The new machine is designed for that class of drilling that is best performed at high speed with sensitive feed, rather than at low speed with heavy feed. It is not recommended for drills larger than $\frac{3}{4}$ -in. size, though it will handle them. It will be noted that the combined movements of the long radial arm, swinging 180 degrees, and the revolving table mounted upon ball bearings, enable the operator to place the drill at any point on the work almost instantly and with little effort. When used for the purpose for which it is designed it is claimed that this machine will do several times the work of the ordinary drill.

The spindle, which has the characteristics of the company's regular line of drill presses, is driven by a single belt, no gears being used in the machine. A patented system involving five idlers guides the belt. In the head of the banjo shaped arm, shown in Fig. 2, is cut a cam slot, which engages a stud carried by the part that also

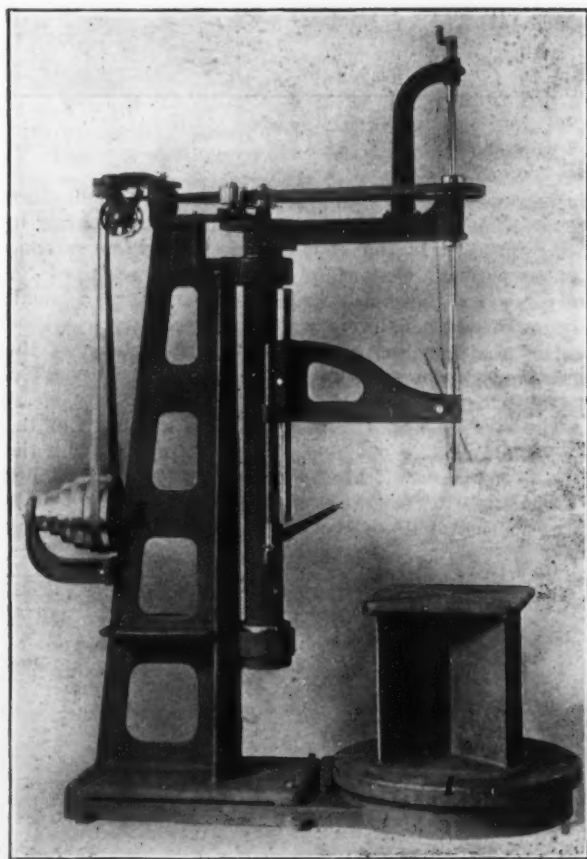


Fig. 1.—A Radial Sensitive Drill Built by the Henry & Wright Mfg. Company, Worcester, Mass.

supports the two adjacent idlers. As the arm is swung the cam motion carries the idlers in the necessary direction and the right distance to maintain the required belt tension. When the arm is swung to the right the belt would lose its contact with one side of the idler at the center of the column if the other idlers remained in the same position, but the cam moves them to the left, maintaining the belt contact. By adjusting the bracket supporting the rear pair of idlers the stretch of the belt may be taken up within reasonable limits without relacing, as a fairly wide faced pulley is used on the driving shaft. The four-step cone driving pulley is driven by a two-speed countershaft, giving a range of eight speeds at the drill point, which permits tapping and drilling within the sizes recommended for the machine.

Means are provided for locking the table, column and spindle arm, so that the machine may be used as a stationary upright drill press. The spindle arm is furnished with a socket to receive the guide bar of a tapping attachment. A second table is furnished for mounting on the main table when drilling small parts, to bring them to the proper height for their easy handling by the operator. The spindle drive has the frictionless balanced feature of the Henry & Wright sensitive drilling machines, and the ball bearings for the thrust and support of the high speed parts. The arm is raised and lowered by a

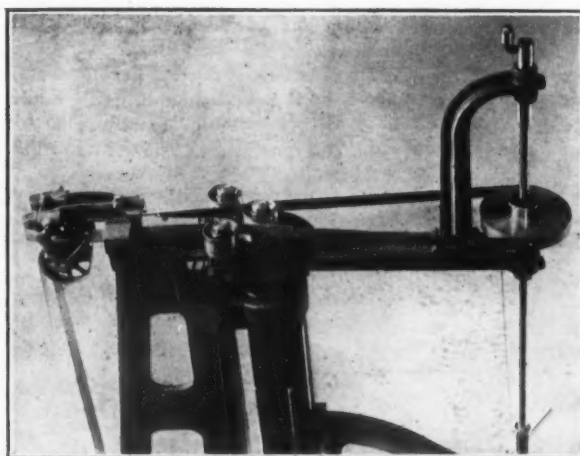


Fig. 2.—The Belt Guiding Mechanism at the Top of the Radial Sensitive Drill.

crank and screw. An important feature is the ease and consequent cheapness with which parts may be replaced. This is especially valuable in the case of the bearings, which are all inserted and interchangeable, prolonging the life of the machine almost indefinitely.

Denatured Alcohol at Jamestown.

Dr. Charles E. Munroe, of Washington, D. C., who is superintendent of the denatured alcohol exhibit at the Jamestown Exposition, has completed the work of installation. In spite of the fact that the new alcohol law has been in force but six months, Dr. Munroe has secured elaborate exhibits from no less than 21 firms and corporations in the United States and Europe, 12 well known German houses being among the number. The exhibits include internal combustion engines, heating and cooking stoves, lamps, laboratory apparatus, &c. Following is a list of the exhibitors:

Internal Combustion Engines.—Otto Gas Engine Company, Philadelphia, Pa.; Nash Gas Engine Company, New York City; John Deere Plow Company, Baltimore, Md.; International Harvester Company, Chicago, Ill.

Stoves, Lamps, and Other Utilities.—Alcohol Utilities Company, New York City; Manning, Bowman & Co., Meriden, Conn.; Elmer & Amend, New York City; W. H. Barnhardt & Co., Norfolk, Va.; Moritz Cohn, Jr., Berlin, Hermann Wolff, Elberfeld; Friedrich Waldbauer, Neuenburg; Spiritus Beleuchtungs Gesellschaft, Frankfurt on Main; Albert Silbermann, Berlin; Louis Rosenthal, Frankfurt on Main; "Gral" Spiritus Glühlicht Gesellschaft, Berlin; I. Hirschhorn, Berlin; Henry Hill & Co., Berlin; Eckel & Glienicke, Berlin; Artopan Works, Berlin; C. F. Kindermann, Berlin.

Denatured Alcohol.—United States Industrial Alcohol Company, New York City.

Additions will be made to the alcohol exhibit from time to time, but a representative collection has already been installed under each class.

In the "Bulletin de la Société de l'Industrie Minérale," issued at St. Etienne, France, is printed an elaborate report by Pierre Breull on researches on the constituents of hardened steel. It was carried out by him at the testing laboratory of the Conservatoire National des Arts et Métiers, at Paris, with the aid of the Société d'Encouragement.

Entirely a Molding Machine Product.

Methods Followed in Making Becker-Brainard Milling Machine Castings.

BY HENRY M. LANE.

The molding machine when in proper hands bears the same relation to the foundry that a good turret lathe does to certain classes of machine work. No turret lathe could be turned over to an ordinary operator without suitable tools and be expected to produce results. In like manner, if a molding machine is to produce results there must be brains back of the movement; in other words, the brains must be put in the patterns. To accomplish this a careful study of the conditions must be made and each piece adapted to its particular machine in the best possible manner. The pattern expense and addi-

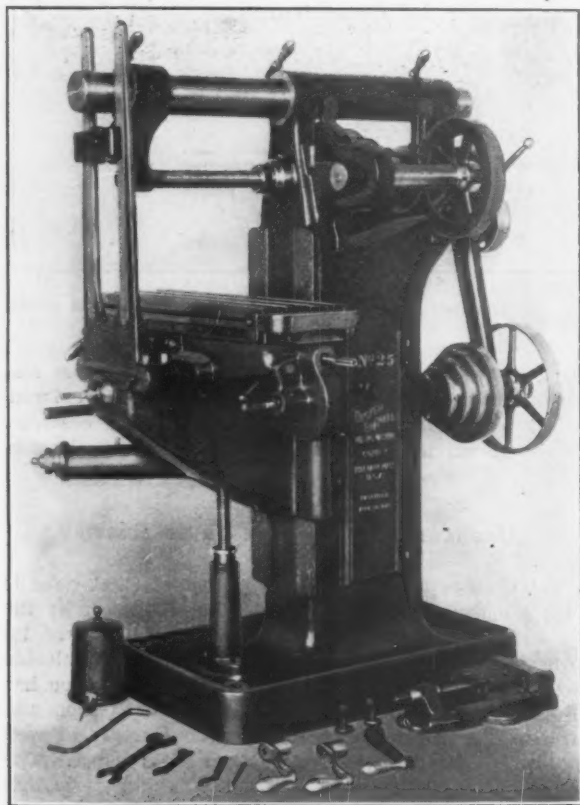


Fig. 1.—The No. 25 Plain Milling Machine of the Becker-Brainard Milling Machine Company, Hyde Park, Mass.

tional superintendence expense are often considerable at the start, but likewise in practically every case these expenditures will pay large returns, not only in increased output, but also in many cases by greatly improving the quality of the castings.

A feature of great importance in machine tool manufacturing concerns operating their own foundries is that with molding machine work the parts can be held very much more uniform in weight, and this will effect a saving in metal in the course of time. It is easy for a careless molder when operating by hand to increase the weight of a standard machine from 100 to 300 lb., and somebody has to pay for this iron. The price the manufacturer receives for the machine is not fixed by the pound, and hence it comes on the machine tool builder.

Realizing all these factors, also that it is necessary to get a large output from a relatively small foundry, and with a view to overcoming certain existing labor difficulties, the Becker-Brainard Milling Machine Company installed a number of Tabor rollover molding machines. Under the efficient direction of the superintendent, L. E. Harper, and his two assistants, W. J. O'Brien and G. H. Foley, a series of patterns, or rather pattern mountings, was evolved which enabled them to put all the castings for a number of their standard milling machines on the molding machines.

Two of the most conspicuous examples of the success achieved are the No. 25 plain milling machine and the No. 7 plain milling machine. The first is illustrated in Fig. 1 and the second in Fig. 2. Fig. 3 shows a group of castings for the No. 7 plain milling machine, all of which were made on molding machines, and all of which run

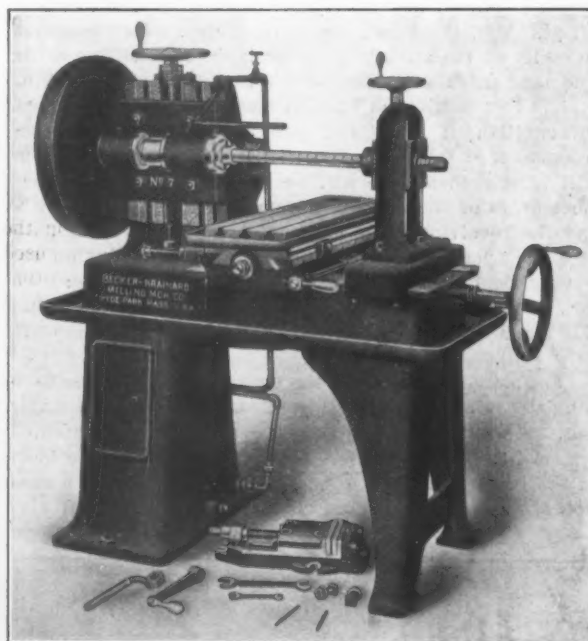


Fig. 2.—The No. 7 Plain Milling Machine.

much truer to pattern and more uniform in weight since the adoption of machine molding. One interesting fact in this connection is that for the most part the existing wooden patterns were simply altered and arranged for mounting on the machines. In some cases a small amount of additional core work was necessary. A good deal of skill has been shown in the arrangement of the flasks and rigging so as to use as little sand as possible, and also to minimize the work of handling the parts.

The view in Fig. 4 is of a mold for a column of the No. 7 plain milling machine. It will be noticed that the flask is composed of three parts, the drag being smaller in area than the cope and cheek. To be accurate, it is only the right half of the latter that is a cheek, being

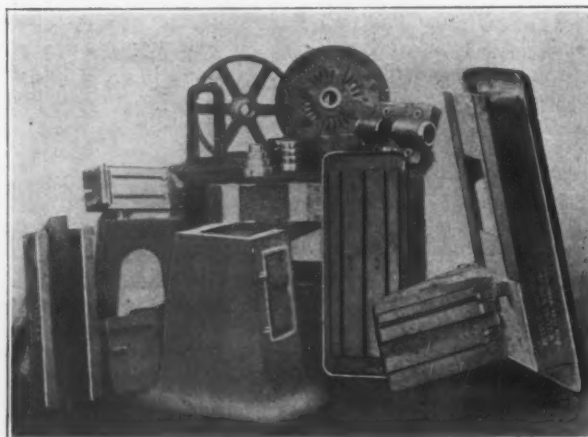


Fig. 3.—No. 7 Plain Milling Machine Castings Complete, All Made on the Molding Machine.

such in relation to the drag proper, for the left half is a drag in relation to the cope proper.

The patterns for the No. 7 plain milling machine column, together with the stripping plate used for one portion of it, are shown in Fig. 5. It will be noticed that they are mounted on good, substantial boards.

Fig. 6 illustrates a very interesting point in this work. On the right of the machine is shown the cheek

for the No. 7 plain milling machine column, while on the left of the machine is the cope. The cheek was rammed up first and turned over. While the molder is finishing this the machine operator changes the patterns on the left of the machine, places the flask and rams up

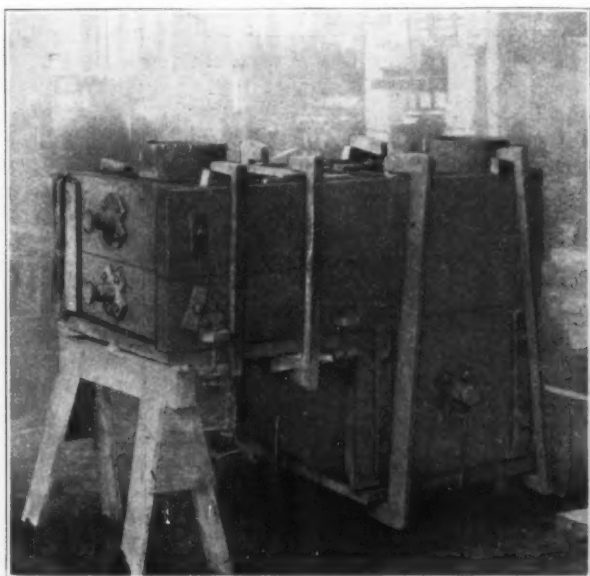


Fig. 4.—Mold for the Column of the No. 7 Plain Milling Machine.

the cope. By the time the cope is completed the molder has finished the cheek, and hence the parts of the mold are all ready for assembling at the same time.

Fig. 7 is another view of the mold and machine. On the left the cheek has just been placed upon the drag, while on the right can be seen the molding machine just after the pattern for the cope has been drawn. Attention is called to the fact that the crane is used in drawing and handling these large patterns, as shown at the right of the machine. After the pattern has been swung back out of the way the cope is lifted by a suitable bail, turned over and placed on the mold. Of course the cores have to be set first. In most cases the cores are set while the molder is finishing the cope. In this foundry is a group of three of these machines which are operated by a gang of five men, with an expert molder to do the finishing and

pattern in two places, making a three-part mold. A set of patterns for one of these knees is shown in Fig. 8, and attention is again called to the boards upon which these are mounted, as substantial mounting of patterns of this kind counts a great deal in the accuracy of the work and the life of the patterns.

The mold for the milling machine knee is shown in Fig. 9. On the left is a completed mold, while behind it in a sling hangs the cope for another. In the center of the picture is the drag with the core set in place, while at the right is shown the cheek ready to be placed on the drag, after which the cope is turned over and lowered into position. All of these parts are being put up by



Fig. 6.—Cheek and Cope for the No. 7 Plain Milling Machine Column in Place on the Machine.

laborers who have been broken in to do this class of work.

The cone pulleys have always been quite an item in all machine tool foundries. These can be put up very easily on the molding machine, and in many cases the cores can also be made on a machine. In Fig. 10 the molding machine is shown rigged up for one of the cone pulleys,



Fig. 3.—Patterns for No. 7 Plain Milling Machine Column.

attend to the setting of the cores. The number of men in any gang of this kind will naturally depend almost wholly upon the shop conditions—that is, upon the difficulty of the work being done in each particular case.

The knee for the No. 25 milling machine is rather an intricate piece for fitting on a molding machine, but this has been accomplished very nicely with the use of some loose pieces for drawing back and also by parting the

while at the right in the foreground are shown three molds. Two of these have had the cores lowered into position, and upon the third the core is standing ready to be placed into position. Behind the machine and operator can also be seen another line of cone pulley molds, some of which have had the cores set, while others are ready for the setting of the cores. In the foreground are two molds for milling machine knees complete, ready for pouring.

This floor was easily put up by two men. In the molding of the cores for a smaller size of cone pulleys four cones are made at a time. Of course in the case of the larger cone pulleys but one could be produced at a single operation. This method of making the cores, however, insures

One of the most remarkable illustrations of the success of molding machines in this class of work is given in Fig. 13. This shows the molding of double flange pulleys. When making these by hand four pulleys constituted a day's work. When molding them on a machine

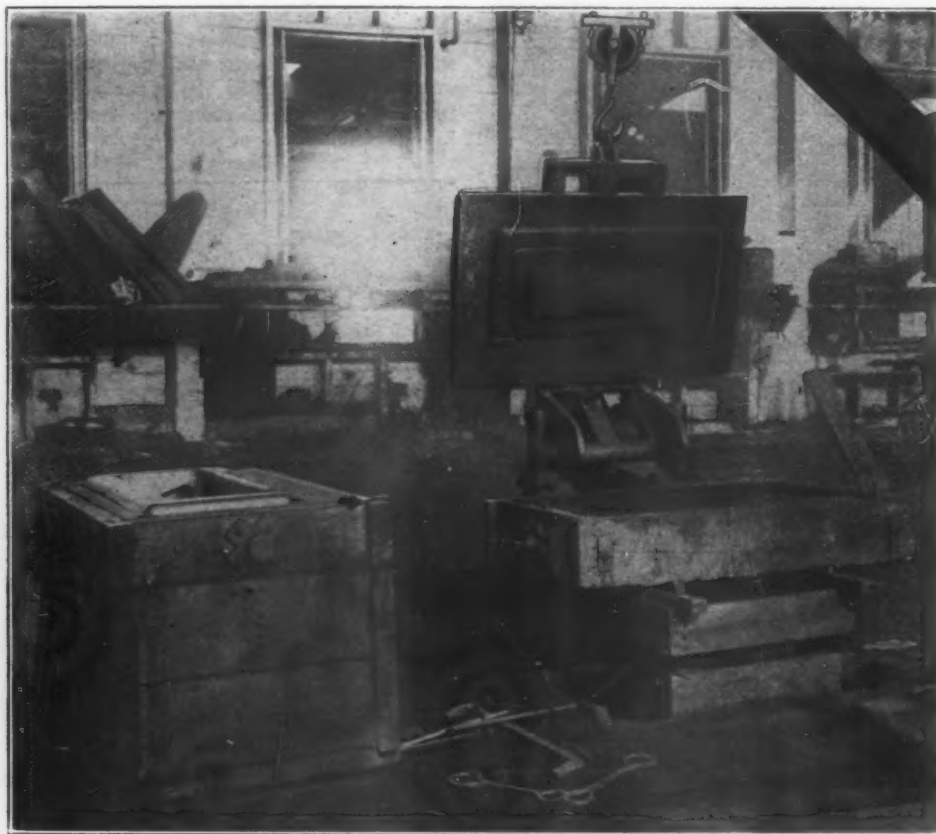


Fig. 7.—Molding the Cope of the No. 7 Plain Milling Machine Column.

accuracy and is very much more rapid than the usual hand method.

The smaller work is largely put up in a side bay of the foundry which is equipped with three machines, and in which all of the work is done by six men. A view of about two-thirds of this floor is shown in Fig. 11. In the

30 are produced as a day's work. The pulleys weigh 90 lb. each, or a total of 2700 lb. for a day's work on the machine. When molded on the machine 30 castings cost \$3.75 for molding expense. When cast by hand four pulleys cost \$3; in other words, the use of the machine in this case effected a saving of \$18.75. Of course such ex-

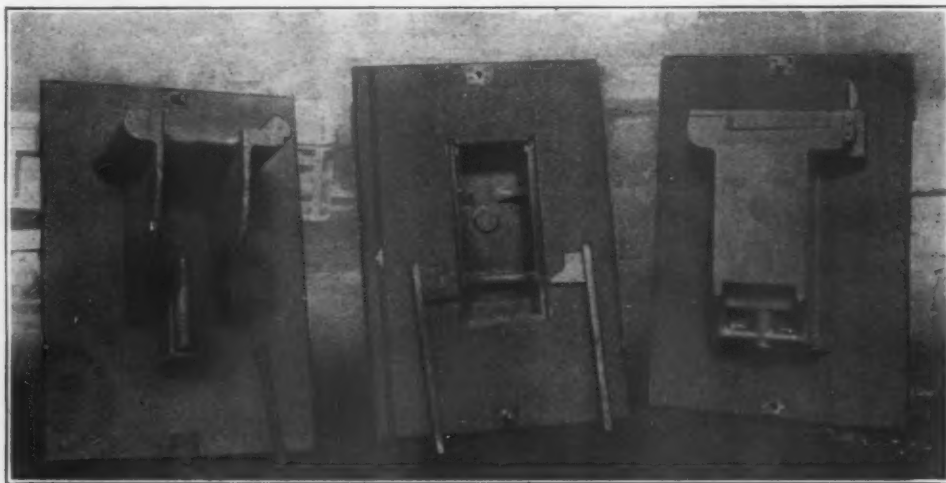


Fig. 8.—Patterns for a Milling Machine Knee.

illustration only two of the machines can be seen, the third one being at the end at which the camera was located.

The molding of a saddle for a No. 2 milling machine is shown in Fig. 12. The cores necessary for this mold are also shown assembled about the mold, ready for getting.

treme savings as this cannot be effected on most work, and against the apparent saving must be counted the extra cost of patterns, the upkeep of the patterns, the cost of the machine and the depreciation on the machine.

There are probably some castings which could not be produced on the machine any more cheaply than they could be produced by hand, but the machine would turn

them out truer to pattern and hence of more uniform weight. One machine in this shop turned out in a day eight carriages for the universal milling machine, three No. 2 saddles and three No. 2-A vertical knees. The total weight of these castings was 2690 lb. Hand molding on

and workman can obtain more for their money in this country than in any other, even though prices on some products may range higher than in other countries. Labor saving appliances have only recently entered the foundry, but they are bound to produce the same revolu-

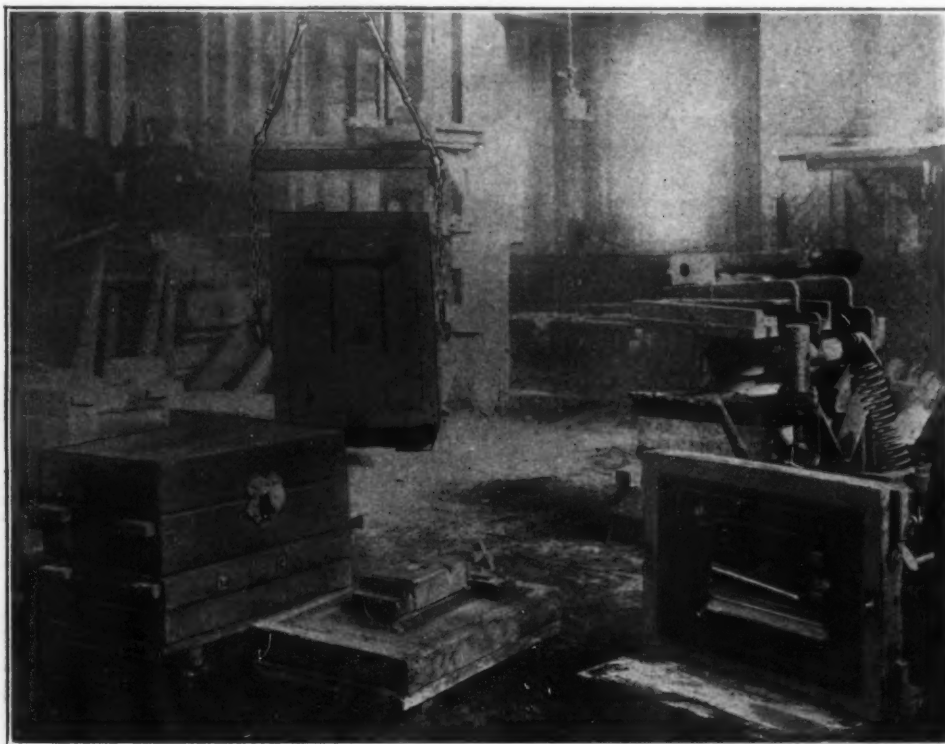


Fig. 9.—Mold for Milling Machine Knee.

this floor would have cost \$36. Machine molding cost \$5.25, or a saving of \$30.75.

The workman is liable to make a mistake and think that all of such a saving as this goes into the profit of the manufacturer. It is true that the manufacturer who first introduces such a method does benefit by it for a time, but it is the history of all our industries that by the

tion in this field that has been seen in the machine shop in the last 25 years.

A New French Machine Tool Company.—The announcement has been made in the *Paris Matin* that there has been organized the Société Française des Machines-



Fig. 10.—Molding Cone Pulleys.

use of labor saving machinery work is produced at a lower cost than in any other country, and at the same time higher wages are paid than in any other country. This means that the total production of the country for each workman is greater, and hence both manufacturer

Outils, in order to manufacture in France machine tools, notably for the automobile industry, which are now largely imported. The officers are the Marquis de Dion, president, prominent in automobile manufacture; M. Rivas, an architect, and M. Dujardin-Beaumetz, vice-

presidents; and as members of the board, Baron de Zuylen, president of the Automobile Club of France; Martin du Gard, president of the Association Générale Automobile de Lapsse, president of the Credit Mobilier Français; Monard of the Aster Motor Company, Turckheim of

Erie Railroad. On its trial trip on July 9 the car ran from Dayton, Ohio, to Jersey City, a distance of 813 miles, under its own power with marked success. In appearance it is similar to the ordinary type of passenger coach, save for a slightly conical front in which is a com-

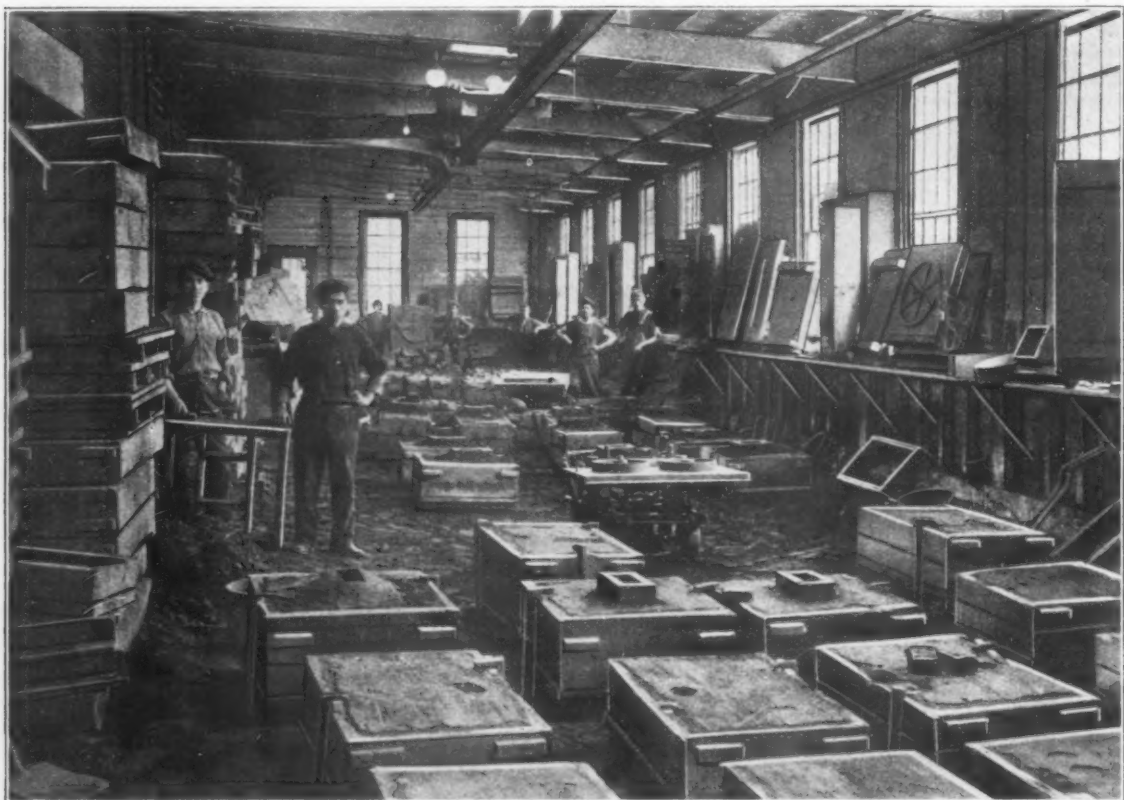


Fig. 11.—Side Bay with Three Molding Machines.

the Société de Dietrich, Mors, a well-known automobile manufacturer; Marins Martin and Baron Rellie, identified with the steel industry. The capital stock of 6,000,000 francs has been subscribed through the Credit Mobilier. Ground has been purchased at Saint-Ouen, near

partment 6 ft. long, containing a 120-hp. Ganz steam generator, 42 in. in diameter and 5 ft. high. The control levers are also contained in this compartment. Two 60-hp. steam motors are used. The car is equipped with air brakes, is lighted by acetylene gas and heated by steam.

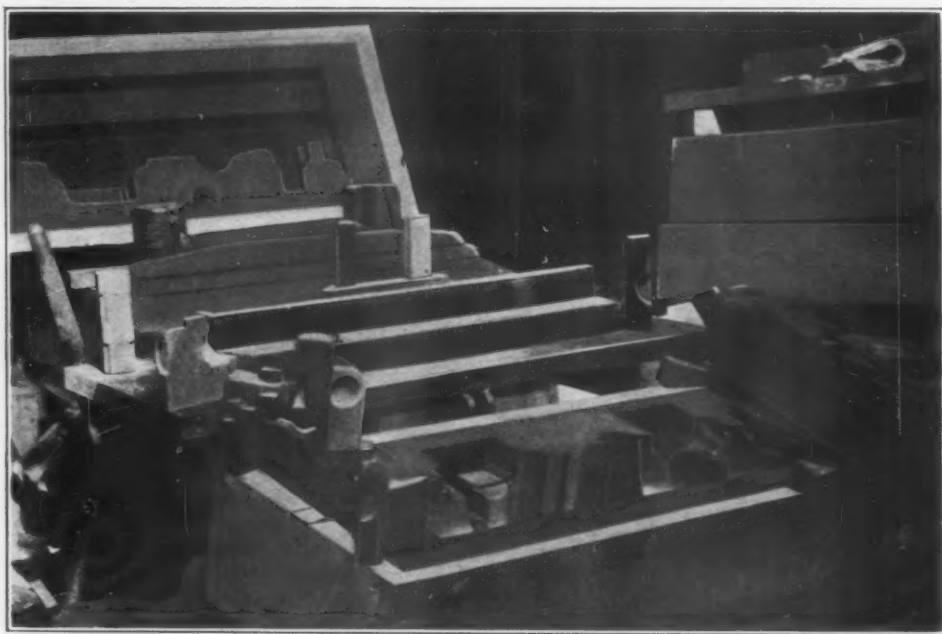


Fig. 12.—Molding the Saddle for a No. 2 Milling Machine.

Paris, and the work of erection has begun. Last year the importation of machine tools into France amounted to 21,000,000 francs.

The first steam motor car of the Ganz type to be run in the United States has been put in commission by the

In complete working order, equipped with fuel and water sufficient for a continuous run of 50 miles, the car weighs 45 tons. The water tank, which has a capacity of 600 gal., is built into the underframe. In the test run it was found that the car will make a speed of 40 miles an hour on a level track and 15 miles an hour on a 2 per cent.

grade, and will haul a train 30 miles an hour on a level track and 11 miles an hour on a 2 per cent. grade.

The Westinghouse Machine Company.

In his report for the fiscal year ending March 31, 1907, Vice-President E. E. Keller of the Westinghouse Machine Company, East Pittsburgh, Pa., makes the statement given below. The company's authorized capital stock is \$10,000,000, of which \$7,279,300 was recently outstanding, together with \$245,000 of mortgage 6s and \$1,120,000 of debenture 5s. The *Financial Chronicle* refers to an issue of \$10,000,000 sinking fund 5s authorized in 1906, of which the amount outstanding, if any, is not known:

The operations of the company at the close of the fiscal year ended March 31, 1907, verified by Haskins & Sells, show a gratifying condition of sound and continued growth. The average annual net earnings available for interest and dividends or for capital account for the five years ended March 31, 1907, were \$818,686. The net earnings available for interest and dividends or for capital account for the year ended March 31, 1907, were \$1,212,733. The net earnings available for interest and dividends or for capital account for the last quarter of the year ended March 31, 1907, were \$400,822, or at the rate per annum of \$1,603,290.

Twelve years ago, realizing that our old quarters in Pittsburgh were obsolete and inadequate, it was decided to construct the nucleus of the present establishment at East Pittsburgh.

soon become an important and profitable feature. Our position as builders of gas engines furnishes a favorable opportunity for the development of a desirable business in producers utilizing any kind of fuel; we have proved the adequacy of our designs in a number of commercially operating plants, and early this year organized a special department to take care of the work, and have started the manufacture and sale on a regular basis. We anticipate the same profitable results that have followed the development of our other lines of work. We voluntarily abandoned the manufacture of double acting steam engines several years ago, for the reason that we could abundantly occupy our manufacturing capacity on more profitable business; but it is interesting to note that we have made contracts with former purchasers of our large engines during the past two years for the use of patterns and drawings for engines to be built to our designs by other makers to the amount of \$12,500 net rental.

On April 1, 1907, we had on hand unfilled orders amounting to \$5,500,000, as against \$3,500,000 on April 1, 1906. I see no indication of any interruption to the excellent volume of trade that we have enjoyed for some years past, but, on the contrary, firmly believe that the outlook is unusually promising. The company is, however, in good condition to weather any period of temporary trade depression.

Sand-Lime Brick.

The manufacture of sand-lime brick is rapidly becoming an important industry in the United States and may become as profitable here as it has been in Germany for the last ten years. A sand-lime brick is essentially a mass of sand cemented by hydrous lime silicates.

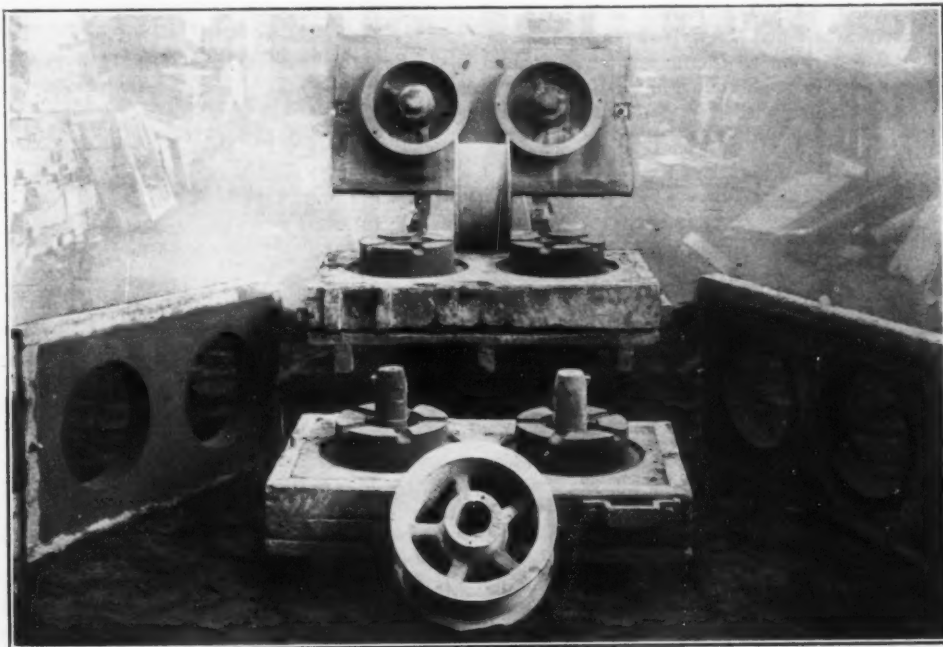


Fig. 13.—Molding Double Flange Pulleys.

During this comparatively short period the assets have multiplied more than 25 times, and the present surplus alone is practically eight times the total assets of the company in 1895; and while making large additions to capital account and surplus, the company has paid liberal dividends to its stockholders for many years, the uniform rate since 1902 having been 10 per cent. Since April 1, 1903, development expenses have aggregated \$1,274,368. Notwithstanding our almost impregnable position as regards the patent situation, and the fact that no patent has been carried on our books at a valuation in excess of its actual cost, generous sums have also been regularly written off in this account.

The sales of Westinghouse single acting steam engines for the year show a gain of about 17 per cent. over those of the previous year, and are practically as large in volume as when we depended on this line exclusively. The sales of small and medium sized vertical gas engines show a gain of about 12 per cent. for the year just ended, in the face of a depleted stock and crowded shops. This condition is now entirely overcome. In the larger gas engines of the horizontal double acting type of from 500 hp. to 3500 hp., the sales have increased nearly six-fold as compared with those of the previous year, and on April 1, 1907, we had unfilled orders on our books amounting to nearly \$800,000. The sales of steam turbines increased nearly \$750,000 over those of the year 1905-06.

The sales of mechanical stokers were 46 per cent. in excess of those for the previous year. For many years we manufactured our stokers in leased premises at Chicago. During the past year we have occupied our modern and commodious new works at Attica, N. Y. For some years we have been developing an improved storage battery; the volume of business has purposely been held down, but it is more than self-supporting, and now that we feel justified in prosecuting this line of business it should

The bricks can easily be made with a crushing strength of over 4000 pounds per sq. in., exceeding in this respect some sand-stones, also with a tensile strength of over 200 pounds per sq. in., and they withstand severe freezing, thawing, and fire tests. When made with pure sand their color is white, but by the addition of manganese or graphite in varying proportions, gray or pink brick may be produced. Both common and front bricks are made. Their chief merits seem to be their white color and their somewhat lower cost of manufacture than that of clay or shale bricks used for building fronts and for ornamental purposes. It is claimed that they make rigid structures and that they are in every way safe and satisfactory as building material.

A plant for making sand lime bricks, near Sayreton, just north of Birmingham, Ala., is briefly described in a paper by Charles Butts in the annual economic bulletin (No. 315) of the United States Geological Survey for the year 1906. The paper includes a list of publications dealing with the subject of sand-lime bricks.

Consols, British Government bonds, are now selling at the lowest point touched since 1848. On July 29 they sold at 82 15-16. As the interest yield is but 2½ to 2¾ per cent., other investments are more attractive to the British public.

The Thwing Electric Pyrometers.

Well made electrical pyrometers are extremely accurate, but their use in the arts has been limited, because of their delicate construction and high cost. This is especially true of the Le Chatelier type, using a thermoelectric couple, which is suitable for quite high temperatures, although it will not measure the very high temperatures employed in steel treatment and casting. Professor Féry's radiation pyrometer will record the highest temperatures accurately, but it is not readily portable nor very convenient to use. Attempts to produce a practical portable pyrometer, particularly for the lower ranges of temperature, have been hampered by the difficulty to eliminate the error arising from variation in the galvanometer resistance due to varying atmospheric temperatures and variation in the temperature of the cold end of the couple under the same atmospheric changes. These difficulties have been successfully overcome, it is claimed, in the portable equipments designed and manufactured by Professor C. B. Thwing, Heed Building, Philadelphia, Pa. Two types are made, shown in Figs. 1 and 2, the first, known as type A, being of the Le Chatelier order, and the other type, B, similar in principle to the Féry radiation pyrometer. Typical scales for the two types are given in reduced facsimile in Figs. 3 and 4. The Thwing type A pyrometer has a complete temperature compensation which does not introduce any dead resistance into the circuit, hence the galvanometer may be made highly accurate without requiring any leveling, and is, therefore, more readily portable. The distinctive feature of the type B pyrometer is that its indications, within



Fig. 1.—The Type A Pyrometer.



Fig. 2.—The Type B Pyrometer.

certain wide limits, are independent of distance, and no focusing or other adjustment is required beyond pointing the receiving tube at the hot body whose temperature is to be measured. The galvanometers for both types are the same in general appearance. The chief points of novelty are in the compensating features, but the simplicity and lightness of the instrument, its weight being only 3 lbs., contribute to convenience and portability.

Compensation for varying temperature of the cold ends of the couple is applied only to type A, since the hot and cold ends of the couple in the radiation pyrometer have practically identical relation with outside temperature changes. The device consists of a compound strip of two metals having unequal coefficients of expansion, so attached to the spring controlling the pointer that the zero reading of the galvanometer is always the temperature of the surrounding air. Without this correction the instrument would read low in summer and high in winter.

It is important also to correct for variation in the resistance of the galvanometer coil, because with a rise in temperature of 50 deg. F. copper resistance increases more than 10 per cent. In the Thwing instrument compensation is effected so that equal deflections are produced at all temperatures by equal electromotive forces and its principle depends on the following truth: The deflection of a coil in a field of magnetic force is proportional not alone to the current traversing the coil, but also to the magnetic flux through the air gap of the magnet. Reluctance, or the resistance of flow to magnetic lines of force, is practically all confined to the air gap,

and for small changes is proportional to the distance which the lines of force must travel in the air. By providing means to automatically decrease the length of the air gap when the temperature rises, in exactly the same ratio that the resistance increases, the deflection for a given electromotive force is constant for all surrounding temperatures.

This scheme as applied is shown in Fig. 5, which is a section of the device and a diagram of the electric and magnetic circuits. The coil rotates about one of its ends in a uniform field between two plane pole pieces. The two magnets that are connected in parallel by these pole pieces differ from those ordinarily employed in being very thin and therefore quite flexible. These magnets are pressed together somewhat by the long end of a strong lever, the short end of which rests upon a post which is part of the aluminum case. Near the bearing of the lever on the post and at the proper distance from it the lever is pierced by a light rod of invar metal, which serves to apply pressure to the magnets. If the temperature of the air rises the aluminum post will expand much more than the invar rod, thus forcing the long end of the lever downward and diminishing the gap between the poles of the magnet by an amount which may be made accurately to compensate for the corresponding increase of electrical resistance in the coil. In practice the device

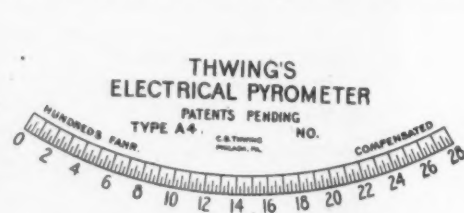


Fig. 3.—Typical Type A Scale.

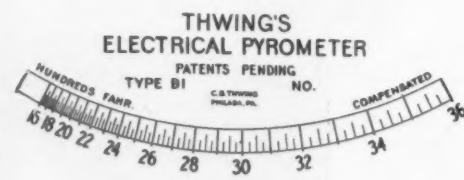


Fig. 4.—Typical Type B Scale.

is found to accomplish its purpose with remarkable accuracy, and thus to solve one of the most serious difficulties in the way of making an accurate and at the same time sensitive portable galvanometer.

A variety of forms and materials are employed for the thermocouples, the aim being to avoid fragile and expensive materials and thus keep down the cost of maintenance. Professor Thwing believes it is entirely practicable to dispense with the use of platinum for all ordinary purposes, the advantage gained by the large size and the high electromotive force of the cheaper wires offsetting the intrinsic durability of the platinum.

In the type B, or radiation pyrometer, the form and material of the thermo-couple and its disposition in the tube which receives the radiations from the hot body are all important. In this instrument a 50-deg. rise of temperature of the warm end of the couple gives the full scale deflection on the galvanometer. Accordingly, a thermo-couple having a high melting point is not necessary. The one used is an alloy of zinc and antimony, which, with Constantan for the other element, gives a very high electromotive force. The exposed ends of the elements are joined by a thin disk of copper, which is blackened so as to instantly absorb the radiant energy and transmit the resulting heat to the couple. In three seconds from the time the tube is pointed at the body the needle indicates the temperature on the galvanometer scale.

That the instrument may not be dependent upon its distance from the hot body the angle of view must be constant, and if the instrument is to require no focusing

it must have a constant focal length. The diagram, Fig. 6, shows that both these conditions are fulfilled. All radiations from points outside the area A A' which enter the tube are absorbed by the dead black walls of the tube, while the radiations from A A' which are included in the angle of view A O A' strike the conical mirror and are transmitted by multiple reflection to the disk which forms the face of the couple. The disk fills the aperture at the small end of the conical mirror and is equally in

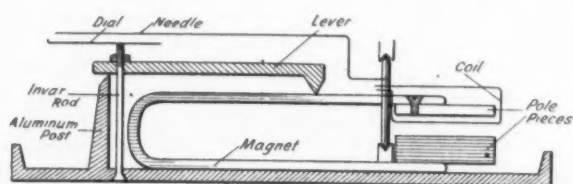


Fig. 5.—Device for Compensating for Variation of Resistance with Temperature.

focus for all rays, no matter what the distance of their source.

The area A A' gives a certain deflection on the instrument in the position shown, and if the surface of which it is a part be now removed to a distance B O, which is twice A O, B B' will be twice A A', and all parts of the surface remaining at a constant temperature, the area sending radiation to the disk will be four times as great as before, since similar figures have areas proportional to the square of their diameters. The intensity of the radiation is, by the law of inverse squares, but one-quarter

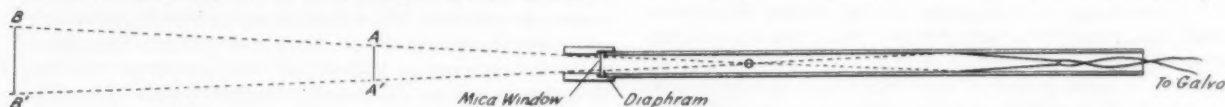


Fig. 6.—Diagram Showing Why the Readings of Thwing's Radiation Pyrometer Are Independent of Distance from the Object.

ter as great at B as at A, and the effect produced at the disk is identical in the two cases. The condition to be fulfilled, that the reading shall be independent of the distance, is simply that the surface have an area large enough to fill the field of view, A O A' or B O B', as the case may be, this angle being constant and determined by the diameter and distance apart of the opening in the diaphragm and the large end of the conical mirror.

This instrument will not measure the temperature of

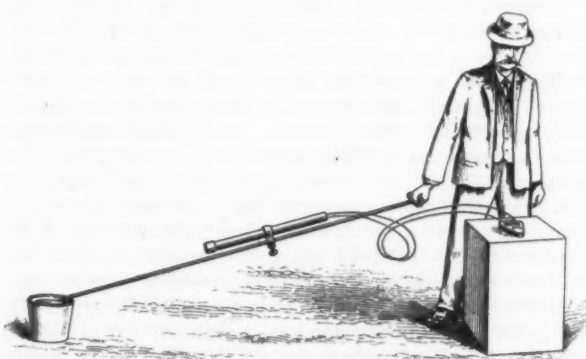


Fig. 7.—A Convenient Manner of Using the Radiation Pyrometer.

a flame, since the flame is partly transparent and the indication obtained would be almost wholly due to the body beyond the flame. It follows that the presence between the instrument and the opaque hot body to be measured of hot air or flaming gases will produce no important change in the reading. Smoky flames will, of course, cut off a part of the radiation and cause the pyrometer to read too low. A light mica window prevents air currents from entering the tube, and hot or cold currents outside produce no effect on the reading of the instrument.

The galvanometer may be quickly placed upon the

floor or a convenient box, as it does not require leveling. Two minutes is ample time to place the instrument and take the temperature of a pot of metal. In use it is found convenient to have the receiving tube clamped to a long iron rod, like a skimming rod, the lower end of which may be rested on the edge of a pot of metal, as in Fig. 7, to guide the pointing of the tube and leave the observer free to read the galvanometer. The temperature of the contents of a large annealing furnace or of a brick or porcelain kiln is quickly taken by pointing the receiving tube through the peep-hole at the portion of which the temperature is desired. As the tube is less than an inch in diameter a very small hole will suffice.

The calibration of the instrument is accomplished by pointing at a fire-clay partition which extends across an electric furnace and is uniformly heated. In the center of the partition is located, flush with the surface, a Le Chatelier thermo-couple. The scale is calculated from the Stefan-Boltzmann law for the intensity of the total radiation from a black body.

$$\text{Energy} = \text{a constant} \times \left(\frac{T}{T'} \right)^4.$$

where T and T' are temperatures on the absolute scale.

The validity of this law is unquestioned. Certainly the agreement of all temperatures to 2600 degrees with the temperatures measured with a thermo-couple justifies the extension of the scale to 3800 degrees F., or higher if desired. For temperatures below 1600 degrees a thermo-couple in direct contact is preferable if it can be used. The radiation instrument has been adapted to a special case where contact was not admissible and measured temperatures in the neighborhood of 300 degrees F. An example of this sort is the measurement of the radi-

ation from the brick walls inclosing a steam boiler. The departure of a mass of fire clay or of steel from a black body is small, and so nearly the same for clay and steel as to introduce only a negligible error.

The radiation pyrometer will find its most important application no doubt in the measurement of temperatures hitherto estimated by inexact or inconvenient means, like those within kilns and furnaces, and in the handling of steel or iron, either in the molten state or when in motion, where the extreme quickness of the method especially commends it.

The Erie Railroad had at work in June this year in its 10 largest shops 6539 machinists, compared with 5420 in June, 1906. The company makes this statement in contradiction of the report recently published that a large percentage of its machinists had quit work. Many Erie machinists went on a strike three months ago, but their places were filled, and it is now stated that the shops are being run with full forces.

The Milwaukee Gas Light Company, Milwaukee, Wis., has compiled and published in pamphlet form a tabulation of prices charged for gas in the principal cities of the United States from 1885 to 1907, inclusive. The schedules of rates received from each company have been carefully gone over, in an effort to make the tabulation as nearly correct as possible. The figures cover prices charged for both illuminating and fuel gas.

The value and tonnage of British exports of iron and steel in the first six months of 1907 exceeded all records. The total pig iron exports were 1,061,275 tons, which compare with 706,466 tons in 1906 and 449,760 tons in 1905 (six months only), and of these quantities the United States took 329,552 tons in 1907, against 114,374 tons in 1906 and 81,445 tons in 1905.

Socialism and the Railroads.*

The Great Menace of the Present Agitation.

BY COL. H. G. PROUT.†

We stand face to face with a situation in our national life of great gravity. We are at this moment in full movement of an historical epoch of deep significance to us as individuals, to our nation and to the human race. The situation which I have in mind is created by the attitude of the American people toward aggregations of capital. Great individual fortunes, corporations, trusts so-called, any devices by which a few men can control large amounts of money, have become objects of suspicion and of active hostility to a great part of our fellow citizens.

The situation has a close historical parallel in the French Revolution. Then the sense of injustice became intolerable, and the plain people cut off the heads of the king and the nobles and burned their palaces and confiscated their lands. The Texas editor who wants us to hang the bankers would have sent his thrifty neighbors to the guillotine if he had lived in France in 1793. Will the resentment of the mass of the American people go as far as to destroy great property values, to impoverish those who have been so wicked as to make a little money and to invest it in the securities of productive enterprises? They have begun the process without knowing what they are doing. Will they go on with it?

Railroads and the Building of the Nation.

The attitude of the people of the United States toward the railroads of the United States is one of the strangest social phenomena within my observation or reading. Consider for a moment what the railroads have done in the history of this nation. The building of the United States was the most colossal real estate enterprise the world ever saw or ever dreamed of. Nothing like it can ever happen again; nothing approaching it. It would be impossible to estimate the value of the part played by the railroads in this real estate operation which we call the building of the nation. It would be almost impossible to overstate it. With pride and with amazement I think of the enterprise, the courage, the genius of the men who risked reputation and fortune in pushing railroads over the uninhabited lands or the thinly peopled areas of our country in the second and third quarters of the century just closed. Those were the heroic days—when men had dreams and saw visions. Those were the glorious days of the youth of the nation. States and counties and towns stood and beckoned to the railroad builders and gave them franchises and rights of way and local bonds. That is why to-day a four-track railroad runs trains at 60 miles an hour over a street crossing at grade through a great city. It is not because the railroad man is depraved or reckless, but because the pioneers said, "Come, help us build the city; help us to get rich"; and the men and women of this land and of England and of Holland, who had saved up a little money, ventured their savings in this colossal speculation, lost their savings very often, and made it possible to build us the cities to cover our continent with a net work of railroads.

It is not strange that under the conditions of our railroad building unwise things and wicked things were sometimes done. We are all foolish and wicked, more or less, and the measure of our folly and of our sin is largely a question of opportunity and of the moral atmosphere in which we live. The building of the railroads and of the cities and of the villages of this continent, the building up of the great industries in steel and oil, in packing and in milling gave abundant opportunities, and the builders did not have very much time to stop to think. It was not strange that indiscretions should have been committed in finance and in the relations of the railroads to the traders and the manufacturers of the nation. It is not strange that certain some-

what crude notions should have been established as to the correct relations of railroads to society.

Railroads as Public Institutions.

In the 20 years that have elapsed since the Interstate Commerce act went into effect there has been a great change in the public conception of what we may call the political economy of railroads, and there has been an important change in the minds of a considerable number of railroad officers. This change has come about very largely through the incessant discussion of railroad matters that has been stimulated by the constant activities of the Interstate Commerce Commission.

The notion has now become very prevalent that the railroads are not to be treated as private properties, to be managed for the stockholders just as a mill is managed, or a dry goods store, or any other large property, but that they are to be regarded as public institutions, at least as quasi-public institutions. A great number of our fellow citizens, including therein many of the most intelligent railroad officers, now believe that railroad affairs should be subjected to Government control. I should say that a majority of our fellow citizens believe this. The question of difference is simply as to the degree of control that the States or the Federal Government are permitted to exercise. Personally, I have a thoroughgoing and fundamental belief in the doctrine that the Government is best which governs least. I contemplate with dread an enlargement of the functions of government, and particularly the invasion of the field of railroad control by the officers of the State and Federal governments. But I recognize that control of the railroads by the various governments within our country is bound to be tried on a very considerable scale. I still believe that it will fail, except in some broad and simple way; but I am quite sure that we shall go through a good many years of experiment with railroad control. This theory of the control of railroads is only one manifestation of the wave of socialism which is sweeping over the country, and which has one of its principal fountains in the White House. It is the oncoming of that great wave which alarms me for the future of our country, and which has such special menace for those who are responsible for the prosperity of the railroads.

I have spoken of the attitude of our people toward the railroads as a strange phenomenon. This is true when you think of the part which the railroads have had in building the country, and when you think further of the part that the railroads play in our daily life. Outside of agriculture, railroading is the most important industry in the country. It employs more men than any other industry except agriculture. It pays out about \$850,000,000 a year in wages, being 60 per cent. of the total operating expenses. It pays in dividends \$233,000,000. The wages and taxes paid by the railroads amount to nearly four times as much as the dividends paid on railroad stock; in fact, the dividend payments amount to only about 3.6 per cent. on the stock; 10 years ago the dividends paid amounted to but 1.7 per cent. A little more than 37 per cent. of all the railroad stock of the country pays no dividends. Ten years ago about 70 per cent. of the railroad stock of the country paid no dividends. These few figures give a notion of what the prosperity of the railroads means to the working people and to the manufacturers and traders of the country, and they give us a notion also of the really very small returns which railroad properties make to their owners.

The Railroad's Contribution to the Individual.

The prosperity and the happiness of every man, woman and child in the civilized world depends more or less on the prompt, cheap and regular movement of freight over the railroads of the United States. Here in the United States the prompt, cheap and regular movement of freight is, excepting the crops, the most important element in our daily happiness and in our continued prosperity. The appreciation of this fact is one important element in the intense popular feeling against the railroads. But people do not know how light is the burden of the transportation tax. They do not know that we have the cheapest freight rates in the world and the best freight service. They do not know that the free play of commercial forces uncontrolled by govern-

* An address delivered before the Traffic Club of Pittsburgh.

† Vice-president and general manager of the Union Switch & Signal Company, Swissvale, Pa.

ments has given us a flexibility and an adaptation of rates and service such as no other country has ever seen. They do not stop to think that an 8-cent loaf of bread has paid 1-3 cent for transportation from the wheat fields of Dakota to the freight station in New York—that is, one twenty-fourth of its cost to the consumer is transportation tax. They do not stop to think that a mechanic, working one day, earns enough to pay for the transportation from Chicago to Liverpool of his food for one year. A long time ago Abram S. Hewitt said that Sir Henry Bessemer was the great apostle of democracy; that he had done more than any other one man to destroy the power in Great Britain of the privileged classes. He meant that Bessemer's discoveries and inventions had reduced the cost of transportation and so brought down the cost of living and enabled the poor man to cut himself loose from the soil of the little parish or county in which he had been reared. Cheap transportation had opened up to the poor man the markets of the world from which to draw his food and clothes, and had given to him the markets of the world in which to sell his labor.

Railroads Must Have Money.

If the railroads are going to continue to do their part in the further development of our country and in the further progress toward liberty, happiness and prosperity of all the people of the earth, it is obvious that they must not be hampered or crippled. This principle applies to their administration and to their financial credit. That their administration may be the most efficient, the freest play must be given to the operation of the great elements of ambition, energy and enterprise, and that they may be able to finance their future requirements their credit must be sustained. You will remember that Mr. Hill has lately said that the money requirements of the railroads of the United States to meet the natural demand of our growing population will be about \$1,100,000,000 a year for five years. Mr. Loree, a clear-headed man with a gift for analysis, has lately told me that he had gone through his own estimate, independently of Mr. Hill, and had arrived at \$900,000,000 a year as the natural requirements of the railroads.

I have already told you that the railroads of the United States are paying now only about \$238,000,000 a year in dividends, and that over 37 per cent. of railroad stock pays no dividends, and that 10 years ago 70 per cent. paid no dividends. It is obvious that they cannot earn the money to extend and improve road and equipment to meet the proper requirements of our people. Where are they to get it. I shall not stop here to consider the debated and debatable question as to who is the most powerful in destroying the credit of the railroads—the financier who represents what the President calls predatory wealth, or the President himself as representing the wrath of the people. I merely point out that at this moment the railroads are between the devil and the deep sea; and, further, that anything which cripples the railroads is a calamity of the first magnitude for the nation.

It is a national misfortune that the railroads are so generally and systematically misrepresented in the public press. Fair discussion, discussion in the spirit of justice and truth, is almost never seen in the daily newspaper treatment of railroad matters, whether it be of accidents, of freight rates, of passenger rates, of whatever may be the subject under discussion. The consequences of this attitude are most serious. Indeed, I go so far as to say that the malicious wrecks that have occurred lately should be charged to the editorial offices of the daily newspapers. By those newspapers the railroads are treated as outlaws. People of feeble reasoning powers and of emotional temperament are easily led to think that it is proper to attack an outlaw in any way that amuses them or gratifies their hatred or envy.

Officials Representative Men.

That predatory wealth of which the President is so fond of talking has really very little to do with the policy of the railroads of the country in general. You know and I know that the great mass of the owners of the railroads are honest and law-abiding citizens. You know and I know that the directors and administrative

officers of the railroads are just like the rest of us—no better and no worse. In intelligence and executive capacity they rank high, because they are disciplined in an exacting school, and they are selected because of their capacity to carry responsibility. In moral character they are probably above rather than below the average. The assumption that they are scheming to cheat their neighbors, that they are trying to contrive ways to annoy their patrons, that they are indifferent and incompetent in practical operation of their railroads would sound childish if it were not so serious and so far-reaching in its consequences.

Of course, we know that wrong things are done by railroad officers. We have heard, for instance, a great deal about rebates, but if we reflect we discover that rebates are not new, simply they have been made illegal. We know that they have been used for years, and even for generations, as a means of building up communities and industries along lines of railroads. Probably in the primitive times many of those railroad managers who granted rebates thought that they were doing a correct and public spirited thing. Unfortunately, correct notions about these matters are almost never presented in the daily press. It is unfortunate, too, that there are so few men having exact information and correct judgment on these matters who have time and disposition to write or speak for the education of the public.

Build Up Correct Public Opinion.

It seems to me that it is a duty of the officers of the railroad companies, and those who are closely related to railroad companies, and who have means of special information, to try to build up correct public opinion. This some of us can do by talk with our neighbors, some of us by occasionally writing for publication here and there, some of us by an occasional public speech, some of us by direct personal contact with our Senators and Representatives in Congress and the members of our State Legislatures. It seems to me that this is an obvious and neglected duty that all of us can perform, and in the aggregate with a good deal of profit, and it is a duty, not to the railroads alone, but to the nation.

Beyond this there is a good deal that every railroad man can do in his daily business life. Much of the public feeling against railroads has its root in little disagreeable things in the relations between subordinate officers and employees and the public. Quite a number of years ago it became my duty to spend three or four weeks among the railroads in England. As I was coming away I went to say good-by to the general manager of the Great Northern Railway, to whom I was under obligations for courtesies. I told him that I had been running about in yards and stations and railroad warehouses and a lot of places where I had no business to go; that I had practically lived on the railroads for three weeks, and that, from the time when I set my foot on the British Islands until the moment of leaving, I had not had an uncivil word or act from any British railroad servant. This did not seem a very surprising thing to the general manager, but it was a very rare and surprising thing to me. In our own country it is the exception to get civility from the minor officials and employees. Every time that a man buys a ticket he runs the risk of more or less gross incivility. It would be hard for us to overestimate the accumulated influence of the display of bad manners toward the public, so characteristic of the minor officials of the railroads of our country.

I wonder how many of you ever thought of the relation between the claim department and hostile legislation. To the outsider it seems as if the claim department of a railroad was a highly efficient organization for obstruction. The desire to ascertain the truth and to help the shipper, or the consignee, or the person who has suffered damage or injury, to get justice is apparently no part of the duty of the claim department. Of course, I am aware of the fact that the railroads must protect themselves against swindling claims, but I do protest that it is contrary to the instincts of the Anglo-Saxon to be considered a swindler until he proves himself an honest man. Do you wonder, when you think of these things, that the great self-respecting, proud American public, with a keen sense of its own rights and dignity, should resent that sort of treatment?

THE IRON AGE

1855-1907.

New York, Thursday, August 1, 1907.

Entered at the New York Post Office, as Second Class Mail Matter.

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RICHARD R. WILLIAMS,	-	-	-	-	-	
						HARDWARE EDITOR.

Our Expanding Foreign Trade.

The totals representing the values of commerce between the United States and foreign countries in the year ending June 30, 1907, put fresh emphasis by contrast on the enormous producing and consuming power of this country. We have not yet reached the point in our industrial and commercial development when our foreign trade, *per se*, is considered as justifying any great swellings of pride. It is always compared with a home trade so far outrunning it as to make our exporting and importing capacity purely incidental. It remains for Great Britain to find in the statistics of its foreign trade the gauge of satisfactory or unsatisfactory conditions at home. Thus British iron trade commentators point with pride to the fact that exports of iron and steel products from the United Kingdom greatly increased in the first six months of this year, while imports were materially diminished, in comparison with the record for the first half of 1906. This latter condition, it may be said in passing, only existed because American and German steel works were very busy.

For the United States, the statistics just made up show that for the fiscal year ending June 30 imports increased \$207,838,646, as compared with the fiscal year 1906, while exports increased but \$136,986,524. Gauged by the British standard the showing might be considered unfavorable. The difference is that in the one case the comparison is with the consuming and producing capacity of a nation of 86,000,000 people, whose per capita production and consumption are the greatest among all the nations, while in the other case there is a population of less than half as many, with the scale of living and of wages such as to make the individual buying and producing power below that in the United States. That our imports expanded last year more than our exports is to be considered an incident of prosperity and high prices—a condition under which larger buying of foreign made luxuries accompanies such a heavy demand upon home manufacturers that export trade automatically falls of normal expansion.

The history of the foreign commerce of the United States in the past 30 years is a remarkable record of growth. The total of exports and imports for the fiscal year 1907 is more than three times that of 1877, and is nearly twice that of 1897. The year ending with June was the third consecutive one in which both exports and imports exceeded a billion dollars for each, and 1903 made the fourth year of which this is true, while 1904 fell not greatly below the mark. As showing how great has been the development in the past 30 years, we append the rec-

ord for 1877 and for the intervening years at five-year intervals:

	Exports.	Imports.	Total.
1877.....	\$602,475,220	\$451,323,126	\$1,053,798,346
1882.....	750,542,257	724,639,574	1,475,181,831
1887.....	716,183,211	692,319,768	1,408,502,979
1892.....	1,030,278,148	827,402,462	1,857,680,610
1897.....	1,050,993,556	764,730,412	1,815,723,968
1902.....	1,381,719,401	903,320,948	2,285,040,349
1907.....	1,880,851,024	1,434,401,092	3,315,252,116

Perhaps the most significant feature of the statistics of the above period is the shifting in the character of our exports—the declining percentages of foodstuffs and of crude materials for use in manufacturing and the increasing proportions of exports of “manufactures ready for consumption” and of “manufactures for further use in manufacturing.” At 10-year intervals the value percentages of different classes of exports were as follows:

	1877.	1887.	1897.	1907.
Foodstuffs	40.83	42.85	40.37	27.67
Crude materials for manufacturing.....	34.06	35.60	28.76	32.03
Manufactures to be further manufac- tured	5.34	5.22	9.52	14.06
Manufactures in final form.....	19.11	15.99	20.63	25.87
Miscellaneous	0.66	0.34	0.72	0.37
Totals.....	100.00	100.00	100.00	100.00

The past decade has emphasized the diminishing percentage of breadstuffs exported from the United States and the enlargement of manufactured products. It may be expected that the future will see further progress in this direction. As the population of the United States increases there will be such a domestic demand for home grown grains and home raised meat as will absorb an increasing percentage of those commodities. As that tendency is more marked manufactured products will be depended upon more and more to increase the balance of trade in our favor.

The iron trade is making a more important contribution than is generally appreciated to the large balance of trade for which manufactured exports are increasingly responsible in recent years. In the year ending June 30, 1907, while official figures are not yet published, it may be safely estimated, based on a total of \$164,304,212 for the 11 months ending with May, that our iron and steel exports reached the record value of nearly \$180,000,000. In the same 12 months the iron and steel imports were valued at about \$41,000,000, or between one-fourth and one-fifth as much. Figures at 10-year intervals indicate how the iron and steel balance has swung from the import side to the export side:

Values of Iron and Steel Imports and Exports.

Calendar year.	Exports.	Imports.
1877.....	\$18,549,922	\$19,874,399
1887.....	16,235,922	56,420,607
1897.....	62,737,250	13,835,950
1907*.....	180,000,000	41,000,000

* Fiscal year, estimated.

The import figures are apt to fluctuate more than those for exports, if history repeats itself, since an inward pig iron movement is always a possibility of such a period as the last 12 months, in which these imports have averaged nearly 50,000 tons a month. The well-known export policy of the Steel Corporation makes it reasonably certain that the export figure will reach steadily increasing proportions, barring recessions of international influence.

Mischance in the Lake Ore Trade.

The strike of the dockmen at the Minnesota ports of Lake Superior and later that of the mine workers on the Mesaba range call attention anew to the various links in the chain of supply that supports the iron industry of the country. About 80 per cent. of the pig iron produced in the United States in 1906 came from the smelting of Lake Superior ores. The furnaces produc-

ing this iron must secure their supplies for a twelve-month in a season of navigation lasting from seven to seven and a half months. As has been frequently pointed out, the mining and moving of this ore require the co-ordination of a complex and varied mechanism of mining and transportation, in which the impairment of one part may be attended with serious results to the whole, such is the interdependence of the various members.

It was not many seasons back that the sinking of a large freighter in a narrow part of St. Mary's River, opposite Sailor's Encampment Island, blocked navigation for days and caused such a congestion of the fleet as brought serious inconvenience to shippers and heavy loss to vesselmen. In the spring of 1906 the longshoremen's strike to compel the recognition of the mates' union held up traffic for days and at a time when some furnaces were awaiting the bringing down of the first ore of the new season. The more stubborn strike of the masters and pilots in 1904 delayed the opening of navigation until nearly the end of June. Had it not been that pig iron production had slackened off at the end of 1903 and that ore stocks at furnace yards were unusually large, that strike would probably have compelled a general banking if not blowing out of Central Western furnaces.

It is to be questioned, in view of the number of sources from which trouble may come, interfering with the continuous progress of the ore from the mine to the furnace, if a sufficient reserve of ore has been carried on Lake Erie docks and in the yards of the furnace companies. In 1902, when the Steel Corporation brought down about 16,500,000 tons of ore, it was understood that about 25 per cent. of this amount represented an addition to the reserve stock of the corporation—the beginning of a policy of providing a better safeguard for furnaces and steel works against interruptions due to mining and lake labor troubles. In that year the ore movement down the lakes was 27,000,000 tons, and it was considered to be well beyond a year's requirements of the furnaces using Lake Superior ore. For the present season, only five years later, the calculation has been that 40,000,000 to 42,000,000 tons of lake ore, or over 50 per cent. more than in 1902, will be needed by the furnaces. While the movement of ore is thus growing rapidly, and promises to increase still further, making a 50,000,000-ton record entirely probable within a few years, even allowing for some recession meantime, it is to be remembered that a prime factor in the problem is substantially unalterable. No lengthening of the season is possible. With certain narrow fluctuations of earlier or later opening and closing, the time factor is substantially seven months. Equipment must therefore be constantly expanded to cope with the tremendous tonnage—the whole machinery of docks, vessels, railroads and mines must be multiplied. As this process goes on it comes about that a week's impairment of an important link in the chain is now as serious as a whole month's idleness only a few years ago, and it will soon be the case that a day's paralysis of the ore moving mechanism will be as disastrous as was a whole week's shut down in the nineties, measured by tonnage actually lost.

It has been assumed that as the ore requirements of the iron trade continue to grow, the response of the Lake Superior ranges and of the machinery of ore handling will simply be enlarged in proportion. Statisticians have made their calculations, based on history, and they have brought us by ordinary processes of progression to a time of 50,000,000, then 60,000,000, 70,000,000 and, not so

far off, 100,000,000 tons of lake ore consumed in a single year. It has been assumed that engineers will solve, as they have thus far, the problems involved in mining this ore, shipping it to upper lake docks, loading it into vessels; moving the vast fleet over courses of 700 to 900 miles that from Lake Superior converge upon the limited lock capacity at the Sault, and later compel an orderly procession through the narrow, winding channel of the St. Mary's River; unloading the ore at a limited number of lower lake docks reached by railroads having certain limits in terminal capacity, particularly in the congested environs of Pittsburgh, hedged up as nature left them. And engineers may meet successfully all these problems in the future as they have up to the present time. But to insure the iron trade against the serious disaster that would come from derangement of this highly organized mechanism—that is a task with which engineering skill and prescience cannot cope.

It is not hard to understand, in the light of what has been said, why the lake trade has appealed to the labor union organizer as a specially promising field for his talents. Its strategic possibilities are unmatched, apart from industries on which the public depends for food and fuel. Nor is it to be wondered at that the leaders in Lake Superior iron mining have felt the obligation to keep that industry free to the largest possible degree from the machinations of irresponsible labor leaders. To have the lake iron mines come under the control of such men, in the way that has happened in certain mining districts of the Far West, would be nothing short of a national calamity.

System in Fighting Shop Fires.

Preparation for the immediate quenching of incipient fires in manufacturing establishments is a detail of shop management that is too often neglected. A great many works, especially those of earlier construction, are not equipped with automatic sprinklers, and a very considerable proportion of these are located in neighborhoods having no adequate water service and fire department. They are to a large extent dependent upon their own resources, and it is vitally important that means be provided for striking at a blaze when it is in its infancy. The contents of a chemical extinguisher instantly applied, or a few pails of water or sand, may mean the prevention of a heavy loss of property. Insurance men and firemen tell of many serious fires which could have been prevented had there been means at hand and men trained to apply them before the flames had the chance to gain headway.

Long exemption from an evil often breeds contempt for it. Where a plant has had no fire for a long time, and no experience of others has served to awake the *personnel* to a sense of the chance that must always exist, preparations for the emergency treatment of flames are apt to be overlooked. It is not unusual to find a pail conspicuously labeled "Fire," or "For use for fire only," with the greater part of its contents evaporated, or perhaps used for some other purpose, saving some one a little trouble in seeking water elsewhere. Pails of sand for use on oil or other material not extinguishable by water are similarly permitted to lose their contents. Extinguishers are not inspected. The insurance people keep an eye open for these instances, and frequently find just such unprepared conditions. The trouble comes down to the fact that responsibility is not placed on the shoulders of any person or persons. What is every one's business is usually poorly attended to.

In many manufacturing plants the shop fire depart-

ment has come to be an important institution. It may be a very simple one, with a few men instructed in their duties in case of emergency, and in preparation for it, or it may be elaborate in its workings, with a comprehensive department, having regular drills with fire hose, pumps, extinguishers or other apparatus. In some large plants there are departments whose men are carefully drilled until they practically equal in efficiency the average of an organized city department. Alarms are sounded at more or less frequent and irregular intervals, so that practice under actual emergency conditions may be had. The firemen are workmen employed in the plant. They are paid their regular wages while on fire duty, and usually there is a bonus in the shape of a lump sum of money once or twice a year—not a great deal, but something to indicate that the men's services are appreciated. Strange to say, these complete systems are more common in cities where there are good fire departments than in outlying sections where works must depend upon their own resources in case of fire, especially in the earlier stages of a fire, when prompt action counts for very much.

Compared with such careful precautions as those briefly enumerated, those plants where little thought is given to the possibility of fire seem sadly wanting in preparation. It is no arduous matter to attend to a few simple details. If nothing more is done it counts to instruct some one foreman or other employee, or several, if there are large departments, to attend to the fire pails and see that they are always full of water or sand. A man so instructed, with the understanding that he will be held strictly to account, should seldom fall in his duty. Similar responsibility should be placed in establishments where more elaborate precautionary measures are taken. There should be enough instruction, so that every means at hand will be used instantly when fire is discovered.

United States Steel Corporation's Earnings.

The Greatest Quarter in the Corporation's History.

The statement of the United States Steel Corporation's earnings for the quarter ending June 30, 1907, makes the following showing, as compared with the corresponding period of 1906:

	1907.	1906.
April	\$14,600,838	\$12,581,902
May	16,056,832	14,041,601
June	14,846,035	13,501,530
Total after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, employees' bonus funds, and interest on bonds and fixed charges of the subsidiary companies....	\$45,503,705	\$40,125,033
Less appropriations for sinking funds on bonds of subsidiary companies, depreciation and reserve and special improvement funds.....	7,723,230	8,652,045
Net earnings.....	\$37,780,475	\$31,472,988
Deduct interest for the quarter on U. S. Steel Corporation bonds and sinking funds for quarter on corporation bonds.....	6,936,963	6,936,963
Balance	\$30,843,512	\$24,536,025
Dividends for the quarter:		
Preferred, 1½ per cent.	\$6,304,919	6,304,919
Common, ½ per cent.	2,541,513	
	8,846,432	
Surplus for the quarter.....	\$21,997,080	\$18,231,106
Less appropriated from surplus on account of expenditures made and to be made on authorized appropriations for additional property, new plants, construction and discharge of capital obligations....	18,500,000	13,000,000
Balance of surplus for the quarter	\$3,497,080	\$5,231,106

The best previous quarter in the history of the corporation was the fourth of last year, when the earnings

were \$41,744,964. For the first quarter of 1907 the earnings were \$39,122,492.

The unfilled orders on hand June 30, 1907, were 7,603,878 tons, against 8,043,858 tons at the close of the previous quarter and 8,489,718 tons at the close of 1906.

Canadian Pig Iron Production.

The statistics of the American Iron and Steel Association show that the production of pig iron in the Dominion of Canada in the first half of 1907 was 270,100 gross tons, as compared with 259,947 tons in the second half of 1906 and 282,010 tons in the first half. Of the total 265,253 tons was coke iron and 4847 tons charcoal iron. The production of Bessemer pig iron amounted to 73,023 tons, against 86,558 tons in the last half of 1906 and 79,051 tons in the first half. The production of basic pig iron was 161,403 tons, as compared with 110,930 tons in the last half of 1906 and 135,298 tons in the first half. The production of malleable Bessemer, foundry, forge and miscellaneous grades was 35,674 tons, a considerable falling off from the record of 62,459 tons in the last half of 1906 and 67,661 tons in the first half. The following table gives the half yearly production in gross tons since 1904:

	1904.	1905.	1906.	1907.
First half.....	120,643	210,206	282,010	270,100
Second half.....	150,299	257,797	259,947	.....
Totals.....	270,942	468,003	541,957	.....

On June 30, 1907, Canada had 14 completed blast furnaces, of which 10 were in blast and four idle. Of this total 12 were equipped to use coke and two to use charcoal. In addition one coke furnace was being built on June 30 and one charcoal furnace was being rebuilt. Three coke furnaces were also partly erected on the same date, work on which had been suspended for some time.

The British-American Pig Iron Trade.

British iron market reports call attention to the slackening of shipments of pig iron from the Cleveland District, due to the falling off in demand from the United States. In the quarter ending with June pig iron stocks in Connal's stores were reduced by 186,061 tons, bringing them down to 271,758 tons, as compared with 538,154 tons at the beginning of 1907, a 50 per cent. reduction in six months. In the first 17 days of July Cleveland warrant stocks declined 23,467 tons, but only one cargo of 5000 tons of iron had gone out in the month to the United States, while in June 42,000 tons was shipped to this country. The demand for pig iron from the Continent was reported active, and this was expected to make up in some degree for the shrinkage of American requirements. At the same time the production of Cleveland pig iron was at a greater rate than ever. For the second quarter of the year the 61 blast furnaces in operation at Middlesbrough produced 581,000 tons of pig iron, or 45,000 tons more than in the second quarter of 1906. In the three months ending with June the total shipments of pig iron from Middlesbrough were 481,939 tons, the previous high record having been 380,000 tons. In the first six months of 1907 the total shipments were 856,243 tons, of which 667,590 tons went oversea.

In May a paper was presented by Dr. G. Stauber, of Aix-la-Chapelle, Germany, before the Verein deutscher Eisenhuettenleute, on lifting and handling appliances in steel works and rolling mills. This profusely illustrated paper has now been issued in a pamphlet of upward of 80 pages by August Bagel, Duesseldorf, at the price of 4 marks. It deals largely with the designs of Ludwig Stuckenholtz, of Wetter and Ruhr, but gives examples of the work, too, of other German builders. There are included hydraulic, steam hydraulic and electrically operated casting cranes, charging machines, ladle cranes, ingot strippers, ingot cranes, electric bloom pushers, charging cranes and rail cranes.

Pig Iron Production, 13,478,044 Tons.

A New Record Made in the First Half of 1907.

The American Iron and Steel Association has just collected complete statistics of the production of pig iron in the United States in the first half of 1907. The total was 13,478,044 gross tons, against 12,724,941 tons in the last half of 1906 and 12,582,250 tons in the first half of 1906. The following table gives the half yearly production since 1904, in gross tons:

	1904.	1905.	1906.	1907.
First half.....	8,173,438	11,163,175	12,582,250	13,478,044
Second half.....	8,323,595	11,829,205	12,724,941	.....
Totals.....	16,497,033	22,992,380	25,307,191	.....

The increase in production in the first half of 1907 as compared with the second half of 1906 amounted to 753,103 tons, and as compared with the first half of 1906 to 895,794 tons. The production in the first half of 1907 was much the largest in any half year in our history, and it was larger than that of any whole year prior to 1899. The magnitude of the achievement is emphasized also by the fact that as late as 1894 the world's production of pig iron amounted to only 25,600,000 tons. The output by States in the half year, compared with that of the first and second half of 1906, was as follows:

Total Production of Pig Iron by States.

States.	Gross tons of 2,240 lb. (Includes spiegeleisen and ferromanganese.)		
	First half of 1906.	Second half of 1906.	First half of 1907.
Massachusetts, Connecticut.	10,218	10,021	8,746
New York.....	746,271	806,388	859,125
New Jersey.....	167,820	211,570	195,245
Pennsylvania.....	5,688,743	5,559,126	5,964,884
Maryland.....	194,907	191,802	221,145
Virginia.....	257,806	225,719	260,912
Georgia, Texas.....	46,865	45,734	26,173
Alabama.....	825,090	849,758	861,771
West Virginia.....	136,662	167,872	151,643
Kentucky.....	35,533	62,594	79,013
Tennessee.....	203,569	223,305	193,371
Ohio.....	2,675,812	2,651,321	2,815,174
Illinois.....	1,011,639	1,145,227	1,263,258
Michigan.....	175,672	193,784	197,330
Wisconsin, Minnesota.....	190,949	182,374	160,045
Missouri, Colorado, Oregon, Washington.....	214,694	198,346	220,209
Totals.....	12,582,250	12,724,941	13,478,044

The production of coke and anthracite pig iron by States was as follows, 334 such furnaces being reported in blast June 30:

Production of Coke and Anthracite Pig Iron.

States.	First half of 1906.		
	First half of 1906.	Second half of 1906.	First half of 1907.
New York.....	746,271	806,388	859,125
New Jersey.....	167,820	211,570	195,245
Pennsylvania.....	5,687,717	5,557,489	5,964,264
Maryland.....	193,498	191,802	221,145
Virginia, Georgia, Texas.....	293,124	257,203	281,092
Alabama.....	814,440	834,578	846,034
West Virginia.....	136,662	167,872	151,643
Kentucky.....	34,580	61,365	78,423
Tennessee.....	203,035	221,306	193,016
Ohio.....	2,674,137	2,647,546	2,815,174
Illinois.....	1,011,639	1,145,227	1,263,258
Michigan, Wisconsin.....	175,673	178,718	158,299
Minnesota, Missouri, Colorado.....	235,932	218,592	245,530
Totals.....	12,374,528	12,499,656	13,272,248

The production of charcoal iron by States is shown in the following table. On June 30 the number of active charcoal furnaces was 25, as against 23 on December 31.

Production of Charcoal Pig Iron by States.

States.	First half of 1906.		
	First half of 1906.	Second half of 1906.	First half of 1907.
Massachusetts, Connecticut.	10,218	10,021	8,746
New York.....	1,026	1,637	620
Pennsylvania.....	2,727	2,176	517
Maryland, Virginia.....	10,650	15,180	15,737
Alabama.....	11,716	15,302	6,421
Georgia, Texas, Kentucky, Tennessee.....	1,675	3,775	0
Ohio.....	137,031	144,337	143,860
Michigan.....	32,679	32,857	29,895
Wisconsin, Missouri, Oregon, Washington.....	207,722	225,285	205,796
Totals.....	207,722	225,285	205,796

* Includes about 500 tons of pig iron made in Georgia in the first half of 1906 with charcoal and coke mixed. No iron has since been made in this country with this fuel.

In the table below the production of all kinds of pig iron in Pennsylvania and Ohio is given by districts:

Production of Pig Iron in Pennsylvania and Ohio.

Districts.	Gross tons of 2,240 lb. (Includes spiegeleisen and ferromanganese.)		
	First half of 1906.	Second half of 1906.	First half of 1907.
Pennsylvania:			
Lehigh Valley.....	333,179	311,911	370,941
Schuylkill Valley.....	352,599	361,847	408,178
Low. Susquehanna Valley.....	334,526	337,768	342,741
Juniata Valley.....	106,794	89,719	115,293
Allegheny County.....	2,856,327	2,846,394	2,851,098
Shenango Valley.....	1,026,306	920,873	1,054,302
Miscellaneous coke.....	677,986	688,977	821,711
Charcoal.....	1,026	1,637	620
Ohio:			
Mahoning Valley.....	949,222	987,714	1,097,426
Hocking Valley, Lake counties.....	744,130	734,591	812,166
Miscellaneous coke.....	774,734	728,058	720,085
Hanging Rock coke.....	206,042	197,183	185,497
Hanging Rock charcoal.....	1,675	3,775	0

The production of Bessemer and low phosphorus pig iron by States and by the various districts of Pennsylvania and Ohio is shown in the table below. In the first half of 1907 it was 7,185,878 tons, against 6,955,637 tons in the last half of 1906 and 6,884,881 tons in the first half. The production in the first half of 1907 includes 95,469 tons of low phosphorus pig iron, against 114,322 tons in the last half of 1906:

Production of Bessemer and Low Phosphorus Pig Iron.

	First half of 1906.		
	First half of 1906.	Second half of 1906.	First half of 1907.
New York, New Jersey....	376,271	413,731	467,143
Pennsylvania:	(3,220,655)	(3,140,039)	(3,135,603)
Lehigh Valley, Schuylkill Valley.....	67,122	80,025	64,788
Low. Susquehanna Valley.....	267,184	289,016	254,443
Allegheny County.....	1,904,927	1,882,391	1,876,784
Shenango Valley.....	712,010	610,118	638,495
Miscellaneous bitumin.....	269,412	278,469	301,093
Charcoal.....	0	20	0
Maryland, Virginia.....	193,498	186,825	220,989
West Virginia, Tennessee, Kentucky.....	141,741	200,925	170,826
Ohio:	(1,927,344)	(1,942,860)	(2,045,577)
Mahoning Valley.....	710,597	741,246	889,668
Lake counties.....	601,843	587,658	602,064
Hanging Rock bitumin.....	73,849	51,781	55,712
Miscellaneous bitumin.....	541,055	562,175	498,133
Illinois.....	817,182	859,640	916,089
Michigan, Wisconsin, Minnesota.....	91,190	76,798	76,505
Colorado.....	117,000	134,819	153,146
Totals.....	6,884,881	6,955,637	7,185,878

The production of basic pig iron in the first half of 1907 was 2,671,136 tons, against 2,569,399 tons in the last half of 1906 and 2,449,275 tons in the first half. Basic pig iron made with charcoal is not included. By States the production of basic iron is shown below:

Production of Basic Pig Iron, Not Including Charcoal Iron.

	First half of 1906.		
	First half of 1906.	Second half of 1906.	First half of 1907.
New York, New Jersey....	118,536	145,411	114,438
Pennsylvania:			
Allegheny County.....	845,780	874,059	881,274
Other counties.....	831,351	811,132	943,939
Virginia, Alabama.....	267,379	302,593	250,590
Ohio, Illinois, Missouri, Colorado.....	386,229	436,204	480,895
Totals.....	2,449,275	2,569,399	2,671,136

The production of spiegeleisen and ferromanganese in the first half of 1907 was 172,675 tons, against 139,667 tons in the last half of 1906 and 160,833 tons in the first half. The production of spiegeleisen alone in the first half of 1907 was 143,992 tons. Of ferromanganese alone the production in the first half of 1907 was 28,683 tons. Pennsylvania produced 121,813 tons of spiegeleisen and ferromanganese in the first half of the year, and New Jersey, Maryland, Illinois and Colorado the remainder, 50,862 tons.

The Lash Steel Process Company, Cleveland, Ohio, has been incorporated by Horace W. Lash, J. M. Woodward, A. A. Stevens, John A. Chamberlain and J. C. Rogers. The company is formed to promote a new steel making process, the invention of Horace W. Lash of the Garrett-Cromwell Engineering Company. The company is capitalized at \$100,000.

The Duty on Ferroalloys.

Twenty Per Cent. to Be Levied Pending New Test Case.

WASHINGTON, D. C., July 30, 1907.—The assessment of duty at the rate of 20 per cent. ad valorem upon the steel hardening alloys known as ferrochrome, ferrotungsten, ferromolybdenum, ferrovanadium, ferrotitanium and ferrouanium, by the collectors of customs at certain ports, notwithstanding the recent decision of the United States Circuit Court of Appeals holding these products to be dutiable at only \$4 per ton, has occasioned much anxiety among importers and steel makers, and numerous inquiries have been received here as to the significance of what appears to be concerted action on the part of the customs officials. The correspondent of *The Iron Age* has made a careful investigation of the subject and is enabled to make an authoritative statement concerning the Treasury Department's plans.

New Test Cases Planned.

Notwithstanding the fact that the Government has been defeated successively before the Board of General Appraisers, the United States Circuit Court and the United States Circuit Court of Appeals in its contention that these alloys are liable to duty as unwrought metals under paragraph 183 of the tariff act at the rate of 20 per cent. ad valorem, collectors at all ports have been instructed to ignore the court's ruling that these products are subject to duty at only \$4 per ton by similitude to ferromanganese. The department's object is twofold: 1. To prepare a new series of test cases on a satisfactory record; and, 2, to prevent a heavy loss in duties should the United States Supreme Court, to which the issue probably will ultimately be carried, sustain the department's contentions.

Under the standing rules of the customs service collectors are required to follow the decisions of the United States Circuit Court of Appeals in all cases in which the Attorney General, as in this instance, declines to apply to the Supreme Court for a writ of certiorari. With regard to these products, however, the record in the original test case, brought by the Roessler & Hasslacher Chemical Company on importations made at New York, was not entirely satisfactory, and while the Treasury Department acquiesced in the decision of the Court of Appeals, it has since secured information which induces the belief on the part of certain customs experts that a materially different showing can be made upon which the Government should win. Under these conditions it is obvious that if a single importation should be selected for test purposes, and duties thereafter collected at only \$4 per ton on general importations pending the Supreme Court's decision, the Government might lose a very large sum which it could never recover. On the other hand, the importers are able to fully protect their rights by filing protests in proper form upon which they can recover any excess duties found by the courts to have been erroneously exacted. The fact that the application of the 20 per cent. rate would in the case of certain of the alloys produce a duty in excess of \$100 per ton instead of \$4 is a special incentive, not only to make a new case, but to impose the 20 per cent. rate until the final decision is reached.

Basis of Government's New Claims.

The hope of the Treasury Department to secure a reversal of the decision of the United States Circuit Court of Appeals is based largely on the evolution which has taken place in the steel making industry since these alloys were first experimentally used. At that time little or nothing was known concerning the utility, from a commercial standpoint, of the special steels that could be made with these materials. The function of ferromanganese was well known and ferrochrome had come into considerable use in the making of armor plate and other steel products requiring certain qualities. The first decision of the courts was in the case of ferrochrome and embodied the similitude principle on the broad ground that both ferrochrome and ferromanganese were employed "to give special characteristics to steel." Subse-

quently, when the other and rarer alloys came before the courts this principle was adhered to. The Government attempted to differentiate the newer alloys by contending that they could be wrought into various articles without the addition of iron or steel, and therefore were liable to duty as "metals, unwrought." Proof in support of this contention, however, was entirely lacking, and the court therefore rejected the Government's classification for reasons tersely set forth as follows:

We agree with the expert for the appellee when he says that the "steel that is made by the use of these other ferros is along the same lines as the steel produced by the use of ferromanganese. There are differences, but the qualities imparted are of the same general family."

Under instructions from the Treasury Department a number of protests have been selected, based on importations at the port of Philadelphia, which will be presented to the Board of General Appraisers some time in September. The record is satisfactory in these cases, which will probably cover nearly all the rarer ferroalloys above enumerated. In trying these cases the Government will put forward two propositions as to which, with the co-operation of certain domestic interests, it has collected a considerable amount of evidence. In the first place, the Government will undertake to prove the claim made in the Roessler & Hasslacher case, but which it then failed to substantiate—namely, that these ferroalloys are susceptible of being wrought, and therefore in their crude condition are properly classifiable as "metals, unwrought." Of course, this is a matter of evidence, and importers and consumers alike will await developments along this line with no little interest.

Similitude Claim No Longer Tenable.

The second contention of the Government is to the effect that while the similitude principle might fairly have been adopted several years ago, when little or nothing was known of the peculiar qualities imparted to steel by these various ferroalloys, it is no longer reasonable to classify them by similitude. Progress in the manufacture of special steels, it is claimed, has demonstrated that the function of these alloys is so different from that of ferromanganese that it is absurd to place them in the same category for dutiable purposes. The Government will present much expert testimony on this point, and will endeavor to develop the very latest technical information for the benefit of the court.

It is probable in this connection that the Government will present an alternative classification for the consideration of the court—namely, that of "unenumerated unmanufactured articles," which are liable to duty at the rate of 10 per cent. ad valorem under section 6 of the Dingley act. This rate, it will be noted, is but one-half of that levied on "metals, unwrought," but, inasmuch as some of these alloys are worth upward of \$500 per ton, if this classification should be sustained the Government will be able to take a duty of \$50 per ton instead of \$4 by similitude to ferromanganese.

Throughout this litigation certain domestic interests have co-operated with the Government in the effort to secure the highest possible duty on these alloys, some of which are now produced in the United States in commercial quantities by electro smelting processes. It is claimed that should the courts finally sustain the \$4 duty the domestic manufacture of these alloys would have to be entirely abandoned.

W. L. C.

Blast Furnaces Building and Projected.—The American Iron and Steel Association's figures show that on June 30, 1907, 29 furnaces were in course of construction in the United States, all of which will use coke for fuel, as follows: New York, 1; Pennsylvania, 10; Alabama, 1; Ohio, 9; Indiana, 5; Illinois, 2, and Wisconsin, 1. In addition three furnaces were being rebuilt on June 30, of which one coke furnace was in Virginia, one coke furnace was in Alabama and one charcoal furnace was in Michigan. One abandoned charcoal furnace in Tennessee may also be revived in 1907. On June 30 there were 13 projected furnaces, all of which if built will use coke for fuel, as follows: New York, 1; Pennsylvania, 4; Ohio, 2; Indiana 5; Michigan, 1. The construction of some of these furnaces is to be begun at once; work on others may not soon be undertaken.

The Mesaba Miners' Strike.

The Strike Losing Its Strength.

DULUTH, MINN., July 27, 1907.—With the visit to the Mesaba range of Governor Johnson of Minnesota last week and with his statements to the leaders of the striking miners, the strike led by the Western Federation of Miners lost strength and is in a fair way to settle itself at once. The Governor met leaders of the strikers at various points, told them that the State would not permit violence or disorder and would exert its entire military power to quell any disturbance; that miners who wished to work must not be interfered with, and that if any of the strike leaders or others made incendiary threats the local courts had laws as to such matters and should be obliged to enforce them. As the great majority of miners were anxious to work and were waiting only for protection this statement assured them, and it is probable that the coming week will see men busy in all mines.

The overwhelming public sentiment at all mine locations against the strike, the decision of the storekeepers everywhere to refuse to sell on credit, the inability of the Western Federation to buy goods with which to stock supply stores of its own at the various range centers, the reputation of the Federation itself throughout the region, and last, but by no means least, the feeling toward the Oliver Iron Mining Company displayed all over northern Minnesota, have been the potent factors in bringing this strike to a peaceful settlement. There is no denial of the fact that at one time things were in a very serious state and that any slight act might have precipitated a crisis that would have resulted in one of the worst labor disturbances in recent years, which would have made scars similar to those of the Homestead strike of years ago.

Its loss of this strike means the elimination of the Western Federation from this region. It had begun to secure a foothold in northern Minnesota, but an unsuccessful fight, which this is and has from the beginning been sure to be, will bring the Federation only discredit. None of the leaders or strike agitators will probably ever again be employed in any mines or about any of the mining towns, and the companies and county officials will doubtless see to it that organizers are not permitted in the region hereafter. Had some step been taken two years ago to eliminate the first that appeared here this present difficulty would not have arisen.

The Strike May Not Be Unfortunate.

But it is not altogether certain that the strike is unfortunate. If it eliminates labor difficulties for the remainder of 1907, that is some good; if it braces up an ore market that looked somewhat wabbly a short time ago, that is another; if it shows all employees of the mining, ore railroad and ore ship interests that the big company is willing to fight indefinitely for a principle and has the nerve to face the prospect of an indefinite shut-down in everything, from mines to steel mills, it is a third; and any one of these is worth all the whole has cost or is now likely to cost.

This strike, serious as it has at times seemed to be, has its humorous elements. Not the least of these has been the anxiety of the railroad men, engineers and the like. These men have not always been averse to taking the strike method of arguing with their employers; now they find themselves out of employment by reason of strikes of men whom they consider much their inferiors. First the dock strike tied up the roads and then the mine strike soaked the knot. Hundreds of railroad men, wages of many of whom ran to \$200 or \$225 per month, were idle because a compact had been broken and a raise of 25 cents a day demanded by a lot of dock laborers. Anxious delegations of railroad men haunted the officers of the roads in endeavors to find out from the latter "where are we coming in?" Needless to say they couldn't find out. The officials were as much at sea as themselves. If these men and others have learned that any bar placed against one element of an industry reacts on every other, and remember this fact, they will be more tolerant in future.

The Steel Corporation Takes the Brunt.

The commanding position of the United States Steel Corporation has been very clearly brought out in this strike. Always the corporation's representatives here have been forced to make every fight that has come up against mining interests in this part of the country. Tax matters, legislation, &c., have been handled by it for the benefit of the industry as a whole. This is natural, of course, in view of the preponderating ownership and operation of the Oliver Company, and doubtless that company does not make any complaint on this score. The same thing was brought out in this strike more notably than ever. The Western Federation took pains, during the first days of the difficulty, to assure many of the independent operators that they should not be disturbed; that the strike was directed at the "steel trust," and that the independent operators, "especially those that have been fair to us," should not be interfered with. Of course the operators were not caught by such promises, as they knew that as soon as possible their own necks would be wrung, and they co-operated with the Oliver Company.

The officers of the Federation were unacquainted with local sentiment and with public feeling toward the Oliver Iron Mining Company and the "steel trust." If they had been their strike would have been handled differently. They thought that the Steel Corporation was an easy mark and that sentiment toward it here was like that toward many coal mining companies in the East or some of the Western gold, silver or lead mines.

Their judgment was at fault, too, in the time of the strike. They had supposed that the Steel Corporation simply had to have ore immediately and could not afford to stop for a moment; that it would order any concessions in order to keep the stream flowing. There is but one time for a strike to be successfully fought, and that is on a rising market. A declining market makes the strike of greater value to the operators than to the miners. With iron prices weak and with orders coming on more slowly than before, a strike to raise wages has no sound foundation.

The Situation Complicated by the Dockmen.

The dockmen who struck first have somewhat complicated their position by organizing and affiliating with the Longshoremen's Union of America. During the few days after they saw the situation slipping out of their hands, and realized that their strike was a sideshow to the main tent, their anxiety to settle and get back on any terms would have been funny if it had not been pathetic. They would doubtless have been working to-day at the old scale if they had not gone under the wing of the Longshoremen. The ore roads cannot afford to have their docks handled by any union affiliated with one scattered over the lakes, so that were any trouble to come on Lake Erie it might tie up affairs at Duluth or Two Harbors. It would not be so serious but for the fact that any tie up of the docks here means a similar cessation of operations at all mines and on the roads. Undoubtedly the ore roads will refuse absolutely to recognize the Dockmen's Union and will treat with them as employees only.

It has been widely published, as an interview with Acting Chairman George W. Perkins, that the miners violated an agreement to work at certain wages till October 31 and that in consequence the corporation could not treat with them. This is an error, doubtless of the interviewers, who probably confounded the two strikes, that in which the dockmen did violate such an agreement with that of the miners, who believed that if the thing was worth doing it was worth doing quickly, and simply went out a week sooner than they said they would. The correction is made in the interests of fact.

The strike has increased considerably ore shipments from the lower ranges of Lake Superior, has added to the coal supply of the upper lakes, and has cleaned the grain elevators of Duluth of their various grains, of which many million bushels were in store a week ago. Harbors at the head of the lake and elsewhere are full of idle ships, but these can get loads as soon as the dockmen go to work, without reference to mine operation, as docks and rail terminals are full of ore which, at the best, cannot be shipped for some days.

D. E. W.

PERSONAL.

Capt. I. M. Bean, president of the Northwestern Iron Company, Milwaukee, Wis., has been named as a member of the recently created Milwaukee park commission, which has been organized to co-operate with the park board in suggesting and outlining a comprehensive system for the future development of local parks and boulevards.

Frank Hitchcock, president of the Andrews & Hitchcock Iron Company, Youngstown, Ohio, is the newly elected president of the Youngstown Chamber of Commerce.

At the annual meeting of the stockholders of the Youngstown Sheet & Tube Company, Youngstown, Ohio, July 25, the following were elected directors: H. G. Dalton, J. L. Severance, C. D. Hine, H. G. Stambaugh, Robert Bentley, E. L. Ford, William Wilkoff, J. G. Butler, Jr., George D. Wick, James A. Campbell and Richard Garlick.

Frank Cunningham, who has been chief order clerk at the Youngstown Works of the Republic Iron & Steel Company, has been promoted to the superintendency of the Toledo mill of that company.

Hugh Chalmers has resigned his position as vice-president and general manager of the National Cash Register Company, Dayton, Ohio, and has been succeeded by William Pfum. W. F. Bippus takes the place of Mr. Pfum as treasurer of the company. S. H. West, the secretary and general solicitor of the company, has also resigned.

W. McConway was elected a director of the Westinghouse Electric & Mfg. Company at the annual meeting last week, succeeding the late P. F. Topping.

William A. Douglass, who has been connected for a number of years with the Chicago office of the David Williams Company, has been appointed Eastern manager for the Calkins Newspaper Syndicate of San Francisco, and will have his offices on the third floor of the Hartford Building, Chicago. The publications of the syndicate comprise quite a number of trade papers and magazines.

A. C. Green, who for three years was connected with the Struthers Furnace Company, Cleveland, Ohio, in the capacity of advertising manager of the cement department, has resigned to accept the same position with the Standard Scale & Supply Company, 243-245 Water street, Pittsburgh.

E. M. MacIlvain, president of the Robins Conveying Belt Company, of New York, sailed for Europe last week.

M. J. Drummond, of New York, prominent in the cast iron pipe trade, sailed for Europe on Saturday, to be gone about two months. Most of his time will be spent in Belgium, Holland and Germany.

New South Wales Iron Making.—The production of pig iron has just been commenced at Lithgow, New South Wales, a large modern blast furnace having been blown in there on April 29 by W. Sanford, Ltd. On two former occasions attempts have been made to smelt New South Wales iron ore. The first furnace was erected about the middle of the last century at Mittagong, and was known as the Fitzroy Iron Smelting Works. After experiencing various vicissitudes, these works were finally closed down in 1877. The second attempt was made at Eskbank, in the district in which the present furnace has been built. This furnace was brought into operation in 1875, but it ceased production in 1882. The new Lithgow Works are situated in a locality conveniently placed with respect to supplies of coke, iron ore, and limestone. The furnace is 17 x 75 ft., has 3 Cowper stoves 22 x 74 ft., and a Giers-Harrison equalizer. It is blown by a Davey 45 x 96 x 5 ft. blowing engine and a Parsons turbo blower. A 15-ton basic open hearth furnace has also been started.

Albert Ladd Colby, consulting engineer, New York, has sailed for Europe for about four months' absence in

the interests of some new German developments in the by-product coke oven industry.

John W. Lawrence has severed his connection with the Pittsburgh Tool & Drop Forge Company, Cheswick, Pa., of which he has been manager, to become vice-president of the Howell Car & Foundry Company, whose general offices are in the Fulton Building, Pittsburgh. He will have charge of the sales of the company's product, comprising mine cars, castings, forgings and the Hughes patent fuel saving furnace.

Joseph Wharton of Philadelphia is expected to arrive on the Baltic.

OBITUARY.

HENRY W. CLARKE.

Henry W. Clarke, who died at his home in Watertown, Mass., July 27, was for many years the active head of Hill, Clarke & Co., Boston. He was born in Princeton, Mass., May 10, 1822, and went to Boston in the year 1835 at the age of 13, entering the employ of George H. Gray & Danforth, hardware merchants. In 1866 he joined the firm of Horace McMurtrie & Co., engineers and machinery agents, which firm was succeeded a few years later by Hill, Clarke & Co., and the character of the business was changed to buying and selling machinery, thus becoming the pioneer machinery merchants in the country as distinctive from machinery agents. Mr. Clarke continued in active business for a period of 70 years, retiring in 1905. He was succeeded by his son, Charles A. Clarke, who is president of Hill, Clarke & Co., Inc., New York and Chicago. Another son is Prof. Frank W. Clarke of the United States Geological Survey. Mr. Clarke was of a particularly genial and kindly nature, thoroughly just in all his dealings, and was personally known to an unusually large part of the trade, having had close business and friendly relations for many years with both manufacturers and users of machine tools.

ALBERT W. GODFREY, well known in the machinery trade, died at his home in Boston, July 29, after a lingering illness. Although a young man, Mr. Godfrey was for a number of years traveling salesman for Hill, Clarke & Co., and was afterward in business for himself as a dealer in machinery at 10 Oliver street, Boston. He leaves a widow and two children.

JOHN WRIGHT, one of the pioneer manufacturers of Wheeling, W. Va., died in that city July 28, aged 83 years. He was born in Pittsburgh, and was there until 1849. His father was engineer at the Shoenberger mill, the son holding the same employment later. Removing to Wheeling he embarked in the iron business, and with others founded the Belmont mill. Later he severed his connection with the Belmont mill and with his followers founded the La Belle. In 1877 he retired from active service at the plant and became a director. He was the last of the original 21 founders of the La Belle Steel Works. He leaves one son and five daughters.

ALBERT FRANCIS HALL, for many years associated with the George F. Blake Mfg. Company, Cambridge, Mass., and its successor, the International Steam Pump Company, died at Somerville, Mass., July 22. He was born in Somerville in 1845. In due time he entered the Massachusetts Institute of Technology, from which he graduated with its first class in 1868, being the only member of the class to take his degree as a mechanical engineer. He pursued the study of his profession in the polytechnic schools of Hanover, Germany. Upon his return to America he entered the employ of the George F. Blake Mfg. Company as a constructing engineer, and for years he had been a factor in the development of the steam pump. He was also known as a master of the pen, having a natural fondness for lettering, and for over 30 years had engrossed the degrees of Harvard University. He was a member of the American Society of Mechanical Engineers, American Society of Civil Engineers, English Society of Civil Engineers and the German Society of Mechanical Engineers. He leaves four children.

NEWS OF THE WORKS.

Iron and Steel.

Arrangements have been completed for the consolidation of the Birmingham Iron Company and the Birmingham Coal Company, Birmingham, Ala., into a new corporation under the name of the Birmingham Coal & Iron Company, which is to have a capital stock of \$5,000,000, and which will issue bonds to the amount of \$7,500,000. The two companies were merged for the purpose of developing the properties and enlarging the output. Improvements are now under way involving an expenditure of \$1,000,000, and further work is planned which will call for an additional large outlay of money. The officers of the new company are H. M. Atkinson, president; P. S. Arkwright, vice-president, and James Bennymman, manager.

Victoria, B. C., newspapers report that J. F. Shadforth, who has been connected with iron works in Great Britain, is in Victoria endeavoring to interest capital in the establishment of a blast furnace and steel works on Vancouver Island. About \$2,000,000, he estimates, will be required. He asserts that the island has large resources in iron ore and fuel, and that iron ore can be delivered at works at \$1.50 a ton. The Pacific Coast trade and the Orient, it is estimated, would give such a plant full employment.

The Detroit Iron & Steel Company, Detroit, Mich., has blown out its furnace on Zug Island for relining. Work will be started soon on the company's new 300-ton furnace.

The new blast furnace which the Wisconsin Steel Company is erecting at South Chicago will probably be ready for blast in January, 1908.

The Inland Steel Company expects to have its new furnace at Indiana Harbor, Ind., ready for blast in August or September. The furnace will have an annual capacity of about 125,000 tons of basic pig iron. Indiana has not made pig iron since 1893.

The United Iron & Steel Company is spending a large sum of money this summer in improvements to its furnaces. A McClure hot blast stove of the three-pass type will be erected at the West Middlesex, Pa., furnace, and one of the same kind will also be installed at the Leetonia, Ohio, furnace. The stoves will be 21 x 85 ft.

The Buffalo & Susquehanna Iron Company, Buffalo, N. Y., blew in on July 1 the one of its two furnaces which was out in June for relining.

General Machinery.

The Marinette Iron Mfg. Company, Marinette, Wis., has recently been incorporated to do a general foundry and machine shop business and to manufacture gasoline engines, drill presses and invalid beds. Since its organization the company has acquired the entire interests of the Silberzahn Gas Engine Company, Marinette, the business of which concern will be developed under the management of the new company. The old Marinette Iron Works plant has been secured by lease and remodeled to suit the requirements of the new organization. The officers of the company are E. D. Fitzpatrick, president and manager; A. Walker, secretary and treasurer, and J. E. Conery, vice-president.

Isaac Church, manufacturer of expansion bolts, South Norwalk, Conn., is in the market for one four-spindle upright nut tapper and emery wheel outfit, either new or second-hand.

The Janesville Machine Company, Janesville, Wis., held its annual meeting last week and voted to increase its capital stock from \$250,000 to \$500,000. Most of the new stock will be subscribed by the present owners. The increased capital will be used to expand the business. New agencies will be established and the sales force increased. The factory has been practically rebuilt during the past two years. Officers for the ensuing year were elected as follows: President, L. R. Carle; vice-president, T. O. Howe; treasurer, John G. Rexford; secretary, A. P. Lovejoy; superintendent, H. I. Milliken; purchasing agent, S. C. Croft.

In order to provide facilities for increasing business, Redin, Ekstrom & Co., Rockford, Ill., makers of woodworking and special tools, contemplate the erection of a new machine shop, about 50 x 100 ft. Definite plans, however, have not yet been adopted, and no active steps have been taken toward the execution of this improvement.

Power Plant Equipment.

The King Mfg. Company, Indianapolis, Ind., has been organized with a capital stock of \$60,000, to manufacture a patent rotary engine invented by J. M. King of that city. D. W. Bolen is president; W. F. King, vice-president; J. H. King, secretary and treasurer; J. M. King, general superintendent; Elbert Johnson, assistant superintendent.

The International Boiler Works Company, Stroudsburg, Pa., has increased its capital stock from \$100,000 to \$200,000.

The Water Power Electric Company, Hickory, N. C., has completed plans for its proposed hydraulic plant on the Catawba River near Hickory, and will install electric machinery in three units of about 1000 hp. each. The electric equipment will include three 600-kw. alternating current generators, direct con-

nected to water wheels. Bids for this equipment, it is understood, will be opened August 10.

The Otto Gas Engine Works, Philadelphia, Pa., has filed notice of proposed increase of capital stock from \$600,000 to \$2,500,000.

Foundries.

The Texas Iron & Car Works, Beaumont, Texas, which recently purchased the plant of the Kirbyville Lumber Company, has made a number of improvements and installed new machinery for the manufacture of logging cars and for general locomotive repair and foundry work. The plant, which is under the management of Monroe W. Carroll, covers 3½ acres of ground and consists of a foundry, machine shops, blacksmith shop, pattern room and office building.

The Montreal Pipe Foundry Company, Montreal, Canada, contemplates the installation of a plant for the manufacture of car wheels.

The Light Mfg. & Foundry Company, Pottstown, Pa., has increased its capital stock from \$50,000 to \$150,000, for extensions to plant.

The Allyn Brass Foundry Company, Buffalo, N. Y., is building a large addition to its foundry on Niagara street.

The Waterman Car Wheel Company, Houston, Texas, has added a second Newton cupola to its equipment, which now consists of one cupola of 5 tons and one of 10 tons hourly capacity. These cupolas were furnished by the Northern Engineering Works, Detroit, Mich., which has also recently installed a 5-ton three-motor electric Northern traveling crane of 72-ft. span in the South Rocky Mount plant of the Atlantic Coast Line.

The Bellevue Pipe & Foundry Company, Bellevue, Ohio, has increased its capital stock from \$60,000 to \$80,000.

The Wheeling Enamelled Iron Company, Wheeling, W. Va., will double the capacity of its plant at Elm Grove, the improvements to cost \$60,000. A new foundry, 63 x 110 ft., will be erected, contract for the structural material for which has been let to the Riverside Bridge Company, Martins Ferry.

Bridges and Buildings.

Among the contracts recently closed by the Southwestern Bridge Company, Joplin, Mo., is one for steel buildings comprising machine shops and foundry for the Bartlesville Foundry & Machine Works, Bartlesville, I. T., and one for the 50,000-gal. steel water tank and tower for Sayre, Okla.

Fires.

The Marsch Foundry Company, Warsaw, Ind., recently sustained a loss by fire, which destroyed its foundry. None of the tools in the machine shop department were damaged. The company has not definitely decided whether it will rebuild the burnt portion of its plant or not.

The briquette plant at Pittsburgh Landing, Cal., of the Charles R. Allen Coal Company, Oakland, was burned July 22. The loss is placed at \$50,000.

The plant of the Chicago, New York & Boston Refrigerator Company, Chicago, Ill., was damaged \$300,000 by fire July 30.

The electric light plant of the Willamette Valley Company, Cottage Grove, Ore., was damaged \$20,000 by fire July 21.

The plant of the Dighton Furnace Company, manufacturer of furnaces and ranges, Taunton, Mass., was destroyed by fire July 24, with a loss of \$60,000.

The power plant at the shops of the Southern Pacific Railroad, El Paso, Texas, was destroyed by fire July 18, the loss being about \$50,000.

The factory of the American Window Glass Company at Bellevue, Pa., was destroyed by fire July 23, the loss being \$70,000.

The Milton Point Shipyard, at Rye, N. Y., was burned July 24, with a loss of \$20,000.

Hardware.

The Diamond Chain & Mfg. Company, Indianapolis, Ind., expects to have its four-story and basement addition completed by October 1. This improvement will practically double its present floor space, all of which is required to meet the increased demand for power transmission chains. The company has recently bought out and is now making a full line of built up block chains for heavy duty, also chrome nickel steel chains which are exceedingly strong, light and are capable of standing elongation from stretch of material.

The Montpelier Cup & Metal Works, Montpelier, Ind., has increased its capital stock from \$30,000 to \$100,000. This action was taken in anticipation of plans for extending and expanding the business. Several newly patented articles will be added to the line now manufactured and the plant itself will be enlarged.

The Bridges Wagon Company, Dallas, Texas, manufacturer of ice wagons, trucks and delivery wagons, has been incorporated under the laws of Texas, with a capital of \$10,000 paid in. The officers of the company are as follows: B. F. Bridges, president; F. A. Winerich, vice-president; D. F. Burks, treasurer; W. H. Richardson, secretary.

At a recent outing of the Foremen's Club of the Corbin

Cabinet Lock Company, New Britain, Conn., George W. Corbin, former president of the company, now president of the Union Mfg. Company, was presented with a handsome silver mounted traveling set as a token of the esteem in which he is held by the foremen of the works of which he was the head.

The Bridgeport Chain Company, Bridgeport, Conn., has increased its capital stock from \$130,000 to \$260,000. The new stock was all taken by the present stockholders and paid for in cash.

The Lyman Gun Sight Corporation, Middlefield, Conn., is about to make important additions to its works, with which increased capacity it is planned to bring out sights possessing many new and important features which have been developed and patented from time to time, but which it has been impossible to manufacture in addition to regular products required to fill orders. Orders for a considerable line of new machinery have already been placed, and present power equipment is ample.

The Atwater Mfg. Company, Southington, Conn., manufacturer of carriage hardware, wrought ox shoes, Star nail pullers, &c., elected the following officers at a meeting held July 16: President, M. N. Woodruff; vice-president and general manager, A. E. Bradley; secretary and treasurer, Edwin G. Lewis; directors, these officers and Franklyn G. Brown and Richard Elliot.

The Safety Shredder Company, New Castle, Ind., has experienced such a large demand for its large power corn huskers that it has been necessary to discontinue the manufacture of the smaller sizes. The 12-roll husker is meeting an excellent sale on account of its safety features and great capacity. The company's 2½-hp. gasoline engine is also in good demand for farm use.

The Viking Shear Company, Erie, Pa., has been incorporated in Pennsylvania by H. Parke Weller, E. E. Walker, W. G. Butler and Henry L. Fish, all of Erie. It has a capital of \$5000, which will be increased.

The Air Pump & Meter Company has been incorporated, with plant at Bradford, Pa. Its capital is \$110,000, the incorporators being Edwin E. Taft, R. J. Hoffman, E. H. Hollingshead, E. J. Jones and B. J. Straight, all of Bradford.

The building containing the works of the A. J. Cook Whip Company and the Ensign Box Company, Westfield, Mass., was the scene of a fire July 26 which caused a loss of \$10,000.

The Hollinger Cutlery Company, Fremont, Ohio, is making addition to its plant and has ordered considerable new machinery. The company makes butcher knives and cutlery specialties.

The Mitchell Reversible Window Company, Fremont, Ohio, which recently started in business, will enlarge its plant and install additional machinery.

The John W. Brown Mfg. Company, Columbus, Ohio, manufacturer of carriage and automobile lamps, has bought out the plant of the Corcoran Lamp Company, Cincinnati, maker of similar goods, and will move it to Columbus.

The Keystone Fence Company and the Atlas Wire Company, Peoria, Ill., have consolidated their interests under the style of the Keystone Steel & Wire Company, which has been capitalized at \$500,000. It is the intention of the company to arrange the stock so there will be one-half preferred and one-half common. The capital is practically fully paid up. The Keystone Company had \$350,000 capital and the Atlas Company \$150,000. The officers of the new corporation are as follows: P. W. Sommer, president; Peter Sommer, vice-president; B. L. Sommer, secretary and treasurer; W. C. Collins, sales manager. Members of the advisory board: Walter Barker, E. H. Walker, Wm. Bittel, D. D. Velde, Pekin, Ill.; Chas. Duisdieker, Pekin, Ill. Directors: Peter Sommer, P. W. Sommer, B. L. Sommer, W. C. Collins, J. N. Ward. The new company will spend considerable money in making improvements and enlargements in the plants. Two 300-hp. boilers have just been installed at the Keystone plant, making a total of 1200 to 1400 hp. there. The Keystone and Atlas companies have been doing a large and constantly increasing business, making it necessary to run nights. During the past month 115 carloads have been shipped by the Keystone concern, while the Atlas company has doubled its business during the past year.

The Pittsburgh Elastic Enamel Company is preparing to erect a plant at Sharpsville, Pa., for the manufacture of enameled ware.

Miscellaneous.

The Bay State Tap & Die Company, Mansfield, Mass., has found it necessary to add three brick additions to its plant, one for the office and stock room, one for a tempering plant, and another for general manufacturing purposes. The additions will add 5000 sq. ft. and double its manufacturing capacity.

A Pennsylvania charter has been issued to the Hydeolite Metal & Bronze Company, Philadelphia, Pa., which will manufacture bronze and other compositions. The incorporators are Frederick D. Hyde, John M. Kennedy, Jr., and F. P. Kennedy.

The Toledo Chimney Machine Company, Toledo, Ohio, has been incorporated, with a capital stock of \$25,000, to manufacture machines for making lamp chimneys. Leonard J. Ulrich and others are the incorporators.

The National Folding Machine Company, Sidney, Ohio, has

been incorporated, with a capital stock of \$20,000, to manufacture circular, newspaper and job folding machines.

The Ohio Cement Company, recently incorporated for \$1,500,000, has broken ground near Wellston, Ohio, for a cement plant having a daily capacity of 3000 bbl.

The Falcon Bronze Company, Youngstown, Ohio, is erecting a new metal house, 20 x 47 ft., on the site occupied by the old one, and is also having placed in its foundry two oil fired melting furnaces made by the Rockwell Engineering Company, New York. The company will, however, make use of its crucibles on steam metal and on its special make of acid metal, as well as its cupola for melting steel plant bearing metal for blooming mills and other heavy work. The latter makes it necessary to operate an electric traveling crane in connection therewith, which is unusual in such shops.

The Chadwick Engineering Works, Philadelphia, Pa., builder of Chadwick motors and motor cars, has let contract for a new building, 60 x 200 ft., three stories, to be erected at Pottstown, Pa. Buildings for power plant and testing departments have already been erected in that city and are ready for occupation. The company expects to occupy its new plant in the fall.

Certificates to Loyal Employees.

Throughout the recent machinists' strike at Cleveland, Ohio, a majority of the employees of the American Multi-graph Company of that city remained at work, notwithstanding that every effort was put forth to induce them to go out. In recognition of the loyalty of such employees the company has prepared a certificate, a copy of which will be presented to each of them. It is 9½ x 12 in., printed in diploma form, and bears the seal of the company, a cut of the plant in tint forming a background for the text. It certifies that the award is made to the employee "for loyalty to the company's interests displayed by him during the recent labor troubles." The certificate further says that "it is not only issued as evidence of the above, but also as a token of the general interest in the welfare of the company displayed by the employee to whom it is issued. Through the medium of this certificate the company desires to express its appreciation of this loyalty, earnestness and spirit of co-operation, which is considered as one of its most valuable assets." The certificate bears the signature of H. C. Osborn, president, and G. H. Kleinert, superintendent, and there is a space for the signature of the employee, this preventing the possible use of the certificate by any other than the original holder.

In writing of the award of these diplomas, R. G. A. Phillips, assistant general manager of the company, says: "The article in the May 30 issue of *The Iron Age*, page 1658, entitled 'Certificates of Merit vs. Union Cards,' should be of particular interest to employers of labor. The idea, if conscientiously followed out, would be of the greatest benefit to both employers and employees. The article was of extreme interest to this company, as the management some weeks before had decided to adopt a certificate of this nature as a recognition of long service or of any special service or loyalty shown. . . . It is our further intention to present certificates of the same general character to our men who have remained in our service for three years, and who during that time have shown the right spirit of co-operation."

On July 5 the 2000th heat was made in the 1.5-ton Héroult electric furnace of the Rich. Lindenberg Steel Works at Remscheid-Hasten, Germany, on the same hearth. The furnace has been in steady operation since March 22, 1906, running on liquid metal from an open-hearth furnace. It was only when the latter had to be relieved that the electric furnace was charged with cold scrap. The dolomite hearth was patched after every heat. It is still intact and promises to stand an additional large number of heats. The cover alone, made of silica brick, had to be renewed every three to four weeks, which takes about two hours and which can be readily done on Sundays.

A strike of machinists is threatened in Butte, Mont., August 1. The union has made a demand on all mining companies for an advance in wages from \$4.50 to \$5. There are 200 members of the union and a strike would probably result in a suspension of work at the mines for a time. The machinists are the only employees of the mining companies who refused to settle on a compromise and sign a five year contract.

The Iron and Metal Trades

The real test of the situation at the Ore mines and at the shipping docks will come as soon as the Oliver Iron Mining Company starts resumption seriously. This is expected at a very early date. The attitude of the local authorities and of the residents in the mining regions has been strongly adverse to the strikers, and the conviction has been growing that the trouble will soon be ended.

The strike has had little effect upon the markets, it being generally understood that it does not influence the early supply.

The Foundry Iron markets are weaker, and what little business has been done has been put through at the expense of lower prices. At tidewater No. 2 Northern Foundry Iron has sold, for forward delivery, on the basis of a shade under \$21 at furnace. Chicago, too, reports lower quotations on local Foundry Irons. It does not appear, however, as though Southern makers had at all changed their attitude, except possibly to lower their figures for delivery during the first quarter of 1908 to \$18 at furnace. There is very little business doing, however.

The Steel Corporation has bought 14,000 tons of Bessemer Pig, practically all of the floating supply in the Pittsburgh District, for August delivery, but has not purchased any Iron in the Eastern markets.

On the whole, deliveries of Pig Iron are very well taken, thus indicating that current consumption is still very heavy. It is only rarely that complaint is heard by melters that they are getting too much Pig Iron and fear an embargo.

There is a good deal of delay in putting through contracts for Structural Material, many of which have been pending for a considerable time. This is apparently due to jockeying for lower prices, since concessions are being freely made by fabricators on erected work. Among the orders just placed is 7000 tons for piers for this city, which is to be followed by 13,000 tons more next month for the same purpose.

The Rail trade is very quiet, the only large transaction being reported from Chicago, where a new traction system has bought 25,000 tons, after negotiations protracted through efforts to finance the new road.

The Carnegie Steel Company has taken the order for the material for another lake boat, involving about 3000 tons. This is the eleventh boat contracted for since the movement began.

The Wire trade continues very busy, and in the Merchant Pipe trade it is still rather a question of time of delivery than of price or terms. Steel Bars have been active in Chicago, where sales aggregating 20,000 tons are reported.

The leading metals continue to show weakness. In small quantities Electrolytic Copper has sold at 20c. today. No details as to reported transactions on a very large scale can be obtained. Spelter is weaker, and a further reduction in the price of Lead by the American Smelting & Refining Company is regarded as imminent.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

July 31, July 24, July 3, Aug. 1,

1907. 1907. 1907. 1906.

PIG IRON, Per Gross Ton:

Foundry No. 2, Standard, Philadelphia	\$22.00	\$22.50	\$23.50	\$18.50
Foundry No. 2, Southern, Cincinnati	23.75	23.75	24.25	16.50
Foundry No. 2, Local, Chicago ..	24.50	25.00	25.50	18.75
Bessemer, Pittsburgh	22.90	23.40	24.15	18.85
Gray Forge, Pittsburgh	22.40	22.90	23.15	17.35
Lake Superior Charcoal, Chicago ..	26.00	27.00	27.00	19.25

BILLETS, &c., Per Gross Ton:

Bessemer Billets, Pittsburgh ..	30.00	30.00	30.00	27.50
Forging Billets, Pittsburgh	34.00	34.00	33.00	33.00
Open Hearth Billets, Phila.	31.75	32.00	32.50	29.00
Wire Rods, Pittsburgh	36.50	36.50	36.50	34.00
Steel Rails, Heavy, Eastern Mill ..	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

Steel Rails, Melting, Chicago ..	17.25	17.50	18.75	14.00
Steel Rails, Melting, Phila.	17.50	17.75	18.25	16.75
Iron Rails, Chicago	20.75	21.50	24.50	21.25
Iron Rails, Philadelphia	22.50	25.00	26.00	21.00
Car Wheels, Chicago	24.50	24.00	25.00	18.00
Car Wheels, Philadelphia	25.00	25.00	25.00	16.50
Heavy Steel Scrap, Pittsburgh ..	17.75	18.00	18.25	16.50
Heavy Steel Scrap, Chicago	15.50	15.50	16.50	13.00
Heavy Steel Scrap, Philadelphia ..	17.00	17.50	18.00	16.50

FINISHED IRON AND STEEL,

Per Pound:

	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia ..	1.85	1.85	1.85	1.63½
Common Iron Bars, Chicago	1.78	1.78	1.78	1.66½
Common Iron Bars, Pittsburgh ..	1.70	1.70	1.70	1.50
Steel Bars, Tidewater, New York ..	1.86	1.86	1.86	1.64½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.50
Tank Plates, Tidewater, New York ..	1.86	1.86	1.86	1.74½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.60
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh ..	1.90	1.90	1.90	1.57½
Skelp, Sheared Steel, Pittsburgh ..	1.90	1.90	1.90	1.60

SHEETS, NAILS AND WIRE,

Per Pound:

	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.40
Wire Nails, Pittsburgh	2.00	2.00	2.00	1.80
Cut Nails, Pittsburgh	2.05	2.05	2.05	1.75
Barb Wire, Galv., Pittsburgh	2.45	2.45	2.45	2.30

METALS, Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	21.00	21.50	23.50	18.50
Electrolytic Copper, New York ..	20.00	21.00	22.00	18.25
Spelter, New York	5.95	6.00	6.35	6.05
Spelter, St. Louis	5.80	5.80	6.27½	5.95
Lead, New York	5.15	5.25	5.25	5.77½
Lead, St. Louis	5.00	5.00	5.15	5.65
Tin, New York	40.25	41.15	42.75	37.40
Antimony, Hallett, New York	10.50	10.50	12.00	23.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	\$4.09	\$4.09	\$4.09	\$3.94

Chicago.

FISHER BUILDING, July 31, 1907.—(By Telegraph.)

Developments in the strike of Lake Superior dockmen and miners are being watched with keen interest. Protracted delay in the operation of the mines and the movement of Ore, it is realized, would not only seriously affect furnace conditions, but would add an element of uncertainty and doubt to the situation which at the present time would be especially unwelcome. Present indications, however, point to an early resumption of work, and if a prompt settlement is reached the curtailment of output will not be important. Aside from orders of good tonnage in Steel Bars, there is little of note observed in the movement of any of the lines of finished or semifinished material. Lack of money to finance large undertakings is responsible for the delay of many enterprises planned which would otherwise be in the market for material. This is especially true of a large number of projected traction systems, whose Rail requirements would amount to a very considerable tonnage. Some of these seem to be in a fair way to secure needed funds, and have completed negotiations for material contingent upon that result. An order for 25,000 tons that has been pending for some time under like conditions is reported to have been finally closed. Jobs secured by fabricators during the week under review have not included any structures of notable tonnage. Deals of this character previously figured on seem to be halting in indecision. As against the quieter movement in new business now noticed in nearly all departments there is no lagging in mill specifications, which are plentiful enough to fully en-

gauge capacities. The Scrap market is without buying support, and prices continue to sag. Both mills and melters seem to be abundantly supplied and are only tempted to purchase by extremely low offers. Pig Iron is likewise lifeless, the demand having dwindled to few scattering orders of small tonnage. Prices have weakened under the strain of dullness, and the future of this year's market hinges on the extent of consumers' demands for fourth quarter. Prices named for forward requirements covering next year's delivery are to some extent nominal and are subject to negotiations.

Pig Iron.—Under the pressure of continued dullness, unrelieved by any semblance of activity, the market has sensibly weakened. Spot and third quarter prices have declined 75c. to \$1 a ton, and price distinctions between prompt and other deliveries through the second half are well nigh obliterated. The demand is exceedingly light, and the scarcity of inquiries indicates no pressing need on the part of consumers, either for immediate or future requirements. The largest sale reported for the week was one of 1500 tons of Northern Iron at \$22 for first quarter delivery. Other sales were few and of inconsequential tonnage, mainly for delivery through the second half. Southern No. 2 Foundry, hitherto held at \$18.50, Birmingham, for first quarter, is now quoted at \$18, but it is certain that on inquiries of desirable tonnage the refusal of the buyer to pay this price would not, so far as the seller is concerned, terminate negotiations. Briefly, the situation is unchanged, except that a week of continued inactivity adds to the weakening trend of market influences. The following prices are for August and September delivery, f.o.b. Chicago, the spread indicated representing the difference between the earlier and later dates of this period:

Lake Superior Charcoal.....	\$26.00 to \$26.50
Northern Coke Foundry, No. 1.....	25.00 to 25.50
Northern Coke Foundry, No. 2.....	24.50 to 25.00
Northern Coke Foundry, No. 3.....	23.50 to 24.00
Northern Scotch, No. 1.....	25.50 to 26.00
Ohio Strong Softeners, No. 1.....	25.50 to 26.00
Ohio Strong Softeners, No. 2.....	25.00 to 25.50
Southern Coke, No. 1.....	25.35 to 25.85
Southern Coke, No. 2.....	24.85 to 25.35
Southern Coke, No. 3.....	24.35 to 24.85
Southern Coke, No. 4.....	23.85 to 24.35
Southern Coke, No. 1 Soft.....	25.35 to 25.85
Southern Coke, No. 2 Soft.....	24.85 to 25.35
Southern Gray Forge.....	21.35 to 21.85
Southern Mottled.....	21.35 to 21.85
Malleable Bessemer.....	24.90 to 25.40
Standard Bessemer.....	25.90 to 26.40
Jackson Co. and Kentucky Silvery, 6 %	31.40 to 31.90
Jackson Co. and Kentucky Silvery, 8 %	32.40 to 32.90
Jackson Co. and Kentucky Silvery, 10 %	33.40 to 33.90

(By Mail.)

Billets and Rods.—Though transactions in Forging Billets are restricted to small lots, prices are firm at the former quotation of \$36 to \$38. Rods are likewise quiet and unchanged at \$37 to \$38, Pittsburgh.

Rails and Track Supplies.—The absence of both orders and inquiries for Standard Section Rails indicates an entire suspension of buying interest for the present at least. It is, on the other hand, apparent, from the number of more or less tentative inquiries for Traction Rails, that only the difficulty of financing interurban road projects prevents the placing of a large tonnage of such Rails. One important deal of this kind involving 25,000 tons, that has been pending for some time, is reported to have been closed during the past week. Business in Light Rails is comparatively quiet. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.90c. to 1.95c.; Spikes, 2.20c. to 2.30c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$34; 25-lb., \$35; 20-lb., \$36; 16-lb., \$37; 12-lb., \$38, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—Outside of small orders for highway and short railroad bridges, and mine and mill building extensions, there has been but little doing in the way of contract closures among fabricators. Bids on revised plans of the new La Salle Hotel are being received. The total of former bids was considerably in excess of estimated cost, and unless more favorable offers develop under the new plans it is highly probable that immediate prosecution of the work may be abandoned. Mill specifications on contracts are fully up to, if not in excess, of recent weeks. Prices from store are quoted without change, at 2.05c. to 2.10c., and mill prices, at Chicago, are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—So far as tonnage for the rest of the year is concerned, the leading interest is fully supplied with contracts. Specifications are not only freely furnished, but there is still an urgent demand from jobbers and consumers for early shipment. Little is heard of any active interest in contracts for future delivery, and no orders involving

tonnage of notable size are reported. One inquiry for 3000 tons from Colorado interests, representing the proposed requirements of a hydraulic power system, was received last week, but it is probable that plans for the work are as yet undeveloped. We quote for future delivery as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in., up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—Black Sheets can now be had with reasonable promptness from some of the smaller mills, but deliveries in general, though much improved, are still subject to more or less delay. Galvanized Sheets lag and are much slower than other grades. New business is fairly active and prices are steady. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 2.03c.; No. 12, 2.08c.; No. 14, 2.13c.; No. 16, 2.23c.; Box Annealed, Nos. 17 to 21, 2.53c.; Nos. 22 to 24, 2.58c.; Nos. 25 to 26, 2.63c.; No. 27, 2.68c.; No. 28, 2.78c.; No. 29, 2.88c.; No. 30, 2.98c.; Galvanized Sheets, Nos. 10 to 14, 2.83c.; Nos. 15 and 16, 3.03c.; Nos. 17 to 21, 3.18c.; Nos. 22 to 24, 3.33c.; Nos. 25 and 26, 3.53c.; No. 27, 3.73c.; No. 28, 3.93c.; No. 30, 4.43c. Sheets from store: Blue Annealed, No. 10, 2.50c.; No. 12, 2.55c.; No. 14, 2.60c.; No. 16, 2.70c.; Box Annealed, Nos. 18 to 21, 2.80c.; Nos. 22 to 24, 2.85c.; No. 26, 2.90c.; No. 27, 2.95c.; No. 28, 3.05c.; No. 30, 3.45c.; Galvanized, from store: Nos. 10 to 20, 3.30c. to 3.35c.; Nos. 22 to 24, 3.55c. to 3.60c.; No. 26, 3.65c. to 3.70c.; No. 27, 3.85c. to 3.95c.; No. 28, 4.15c.; No. 30, 4.65c. to 4.70c.

Bars.—In comparison with other mill products, the demand for Steel Bars is exceptionally good. New business to the extent of 20,000 tons was booked within the week by one interest, which mainly represents season contracts of jobbers and manufacturers in miscellaneous lines. The demand for Iron Bars is only fair, with prices generally well sustained. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.78c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—The question of price and demand continues to hold a secondary place to that of deliveries. There are no changes in either respect to report. The following mill discounts are quoted: Black Pipe, 3/4 to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, 3/4 to 6 in., 61.2. These discounts are subject to 1 point on the base. From store in small lots, Chicago jobbers quote 68 per cent. on Black Steel Pipe, 3/4 to 6 in. About 4 points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—The demand for Tubes is perhaps a little less insistent so far as new business is concerned. Mill conditions as to deliveries show but little improvement. Prices are firm and unchanged. Mill quotations for future delivery on the base sizes are as follows: 2 3/4 to 5 in., in car-load lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2 1/2 in. and smaller, and lengths over 18 ft., and 2 1/2 in. and larger and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1 1/4 in.....	35	35	35
1 1/4 to 2 1/4 in.....	50	35	35
2 1/4 in.....	52 1/2	35	35
2 1/2 to 5 in.....	60	47 1/2	47 1/2
6 in. and larger.....	50	35	..

Merchant Steel.—Activity in lines embraced under this head is not more than what might reasonably be expected at this season. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish, up to 1 1/4 x 1/2 in., 1.93c.; Iron Finish, 1 1/2 x 1/2 in. and larger, 1.78c., base; Channels for solid Rubber Tires, 3/4 to 1 in., 2.28c., and 1 1/4 in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46 1/4c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7 1/4c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots, and 45 per cent. in less than car lots, base territory.

Cast Iron Pipe.—Without any lettings of mentionable tonnage up, or in sight, the market is now almost wholly dependent upon small routine orders; and these are not over-plentiful. Buyers seem to be holding off in anticipation of a possible break in prices. We quote per net ton, Chicago, as follows: Water Pipe, 4-in., \$38 to \$39; 6 to 12 in., \$37 to \$38; 16-in. and up, \$36 to \$37; with \$1 extra for Gas Pipe.

Coke.—Although the demand shows little change from

that of recent weeks, prices are somewhat firmer on account of lessened oven output. Seventy-two-hour Connellsville Coke is quoted at \$3 to \$3.25, the spread covering the range of prices for prompt and contract deliveries.

Old Material.—The market has failed to find support necessary to prevent further sagging, and as a result prices on several grades are lower. Even present values do not seem to tempt buyers, and trade is in consequence exceedingly dull. Until within a short time an outlet for a large amount of melting material originating here was found in the Pittsburgh District, but the demand from this source has ceased. Local mills have accumulated a large tonnage and are now buying very conservatively, and only when attractive prices are offered. In contrast with the weaker tendency elsewhere apparent, Old Car Wheels are firmer and in good demand. While a sale at \$24.50 is reported, it is unlikely that any considerable tonnage can be had at less than \$25. We quote as follows, per gross ton, f.o.b. Chicago:

Old Iron Rails.....	\$20.75 to \$21.25
Old Steel Rails, rerolling.....	17.50 to 18.00
Old Steel Rails, less than 3 ft.....	17.25 to 17.75
Relaying Rails, standard sections, subject to inspection.....	28.00 to 30.00
Old Car Wheels.....	24.50 to 25.00
Heavy Melting Steel Scrap.....	15.50 to 16.00
Frogs, Switches and Guards, cut apart.....	15.50 to 16.00
Mixed Steel.....	11.50 to 12.00

The following quotations are per net ton:

Iron Fish Plates.....	\$16.75 to \$17.00
Iron Car Axles.....	23.50 to 24.00
Steel Car Axles.....	20.25 to 20.75
No. 1 Railroad Wrought.....	14.50 to 15.00
No. 2 Railroad Wrought.....	13.50 to 14.00
Railway Springs.....	15.00 to 15.50
Locomotive Tires, smooth.....	17.00 to 17.50
No. 1 Dealers' Forge.....	12.00 to 12.50
Mixed Bushing.....	10.50 to 11.00
Iron Axle Turnings.....	10.75 to 11.25
Soft Steel Axle Turnings.....	10.75 to 11.25
Machine Shop Turnings.....	10.75 to 11.25
Cast Borings.....	9.00 to 9.50
Mixed Borings, &c.....	9.00 to 9.50
No. 1 Mill.....	9.75 to 10.25
No. 2 Mill.....	8.75 to 9.25
No. 1 Rollers, cut to Sheets and Rings.....	11.00 to 11.50
No. 1 Cast Scrap.....	17.25 to 17.75
Stove Plate and Light Cast Scrap.....	14.25 to 14.75
Railroad Malleable.....	16.00 to 16.50
Agricultural Malleable.....	15.00 to 15.50
Pipe and Flues.....	11.50 to 12.00

Metals.—The market is extremely quiet and the orders coming in are for small lots. Buyers are apparently persistently holding off in the hope of lower prices. We quote as follows: Casting Copper, 23c. to 23½c.; Lake, 24c. to 24½c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 42½c.; small lots, 43¼c.; Lead, Desilverized, 5.75c. to 5.85c. for 50-ton lots; Corroding, 6.50c. to 6.60c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 6.25c.; Cookson's Antimony, 20c., and other grades, 19c. to 19½c.; Sheet Zinc is \$8.35 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 20c.; Heavy Copper, 19½c.; Copper Bottoms, 17c.; Copper Clips, 18c.; Red Brass, 17½c.; Red Brass Borings, 15c.; Yellow Brass, 14½c.; Yellow Brass Borings, 13c.; Light Brass, 11c.; Lead Pipe, 5c.; Tea Lead, 4.65c.; Zinc, 5c.; Pewter, No. 1, 30c.; Tin Foil, 35c.; Block Tin Pipe, 40c.

Birmingham.

BIRMINGHAM, ALA., July 28, 1907.

Pig Iron.—There has been no perceptible change in the Pig Iron market. The melters who have not covered for present requirements continue to buy in small lots, ranging from 50 to 500 tons. One concern claims to have sold a total of 6000 tons this week in orders of this character. Few of the large inquiries of last week have developed into business. It is understood that the furnace people offered very little inducement to the larger melters to place business, and they are apparently holding off, hoping for greater concessions. Shipments are moving regularly and requests to withhold Iron are fewer than usual at this season of the year. No stocks have accumulated on the furnace yards here, with the exception of off grades, and even a large portion of that class of Iron has been moved within the past two weeks. Prices are more or less irregular, depending on the quantity of Iron each furnace has to sell, but the following quotations are approximately correct: Third quarter, \$20.50 to \$21.50; last quarter, \$20 to \$20.50; first quarter next year, \$18.50. In the event that a buyer wants a large proportion of the lower grades of Foundry Iron a combination can usually be worked which will reduce the cost, inasmuch as the usual differentials are not being adhered to.

Cast Iron Pipe.—The week's business has been composed entirely of small orders ranging from 200 to 500 tons. In the aggregate, however, the tonnage booked was satisfactory considering the season of the year and the dullness prevailing in almost all lines. Several lettings are booked for next week in which the tonnage involved is somewhat larger, but no contracts of any great importance are now in sight.

Owing to the excessive heat which has been prevailing here for some weeks the output of the Pipe foundries has been greatly restricted, and several are falling behind on deliveries. All order books are reported well filled, and the market is said to be quite firm at about the following prices on Water Pipe, per net ton: 4 to 6 in., \$36; 8 to 12 in., \$34; over 12 in., average, \$31, with \$1 per ton extra for Gas Pipe.

Old Material.—There is little change in the Scrap market from week to week. Perhaps Cast can be bought at slightly lower figures since the decline in price of spot Iron, and especially since the accumulation of lower Foundry grades has caused additional concessions on such grades of Iron, as it is with these that Cast Scrap enters most largely in competition. Wrought is apparently on a standstill, but a number of inquiries for Steel Scrap might indicate an improvement in the near future. Dealers' quotations are approximately as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$22.00 to \$22.50
Old Iron Axles.....	18.50 to 19.00
Old Steel Axles.....	17.50 to 18.00
Old Car Wheels.....	20.50 to 21.00
No. 1 Railroad Wrought.....	18.50 to 19.00
No. 2 Railroad Wrought.....	13.00 to 13.50
No. 1 Country Wrought.....	13.50 to 14.00
No. 2 Country Wrought.....	12.00 to 12.50
Wrought Pipe and Flues.....	13.50 to 14.00
Railroad Malleable.....	14.00 to 14.50
No. 1 Steel.....	15.00 to 15.50
No. 1 Machinery Cast.....	16.00 to 16.50
Stove Plate and Light Cast.....	13.00 to 13.50
Cast Borings.....	8.50 to 9.00

Philadelphia.

PHILADELPHIA, PA., July 30, 1907.

The Iron and Steel markets remain in precisely the same condition as noted a week ago. There is no improvement in the demand, and there is no material change in prices, although it is well understood that if good business was offered makers would be willing to make reasonable concessions, but so long as there is no demand, except for carload lots and from that up to 200 or 300 tons, it is not considered worth while to make changes. There is, of course, a great deal of guessing in regard to what the ultimate outcome will be, but even the most experienced men are unwilling to commit themselves to definite figures. Present appearances, of course, indicate that lower figures will have to be quoted before large buyers come in for deliveries for the last quarter of this year and the first quarter of next year. In most cases consumers are pretty well supplied for August and September, and in some cases for the three following months. It does not appear that there has been any important curtailment in consumption, although the present output appears to be ample for all requirements, and any increase in the supply would doubtless exercise a depressing influence. Reports are so contradictory, however, that it is extremely difficult to get down to the bottom facts. Western reports being cheerful in comparison with the Eastern territory. Deliveries are well taken, however, and there are not many cases in which postponement of shipments is asked for, but there are some, and with the exception of Basic Iron there is no particular clamor for early shipments. The low prices quoted for Scrap Iron and Scrap Steel exercise some influence, and up to this date there are no trustworthy indications of anything but a hand-to-mouth demand for both Pig Iron and Scrap material. Nevertheless, every week brings contracts nearer to completion, so that during the coming month there should at any rate be considerably more activity. This does not necessarily imply that sellers of Pig Iron will rush the market, neither does it follow that consumers will abandon their attempt for lower prices. It is a rule that works both ways, and if sellers are under the necessity for realizing, buyers will also be under the necessity of renewing at least a portion of their contracts at some price, but what these prices are to be time alone can tell.

Pig Iron.—There is no disposition to buy for forward delivery, while prices are if anything a shade lower. There may be a demand for a somewhat larger tonnage for August and September delivery, but the entire business is a mere trifle compared with the earlier months of the year. The possibility of a shortage in Ores is beginning to attract attention, and if the trouble with Lake Superior mine labor is not brought to a speedy conclusion it may arouse fears of a shortage of Ores and influence consumers to enter the market sooner than they otherwise would. The situation is extremely sensitive, however, although at the moment the market is undoubtedly weak, and it would require lower prices to bring in anything like heavy buying; how much lower is not apparent at the present time, because buyers have not reached the point where they must have Iron. Consequently they are waiting to see which way the cat will jump, especially as recent developments have favored the waiting policy. In regard to prices, it is almost impossible to quote them with much exactness. No large business is on the market, in the absence of which sellers see no use in reducing prices, as they would get no more orders at 50 cents

to \$1 less than they get without making reductions. Iron is bought to cover early requirements, not because it is likely to go higher. Prices, therefore, are of no great significance, nor are they likely to be until large buyers come into the market. When that will be and at what figures remains to be seen, but there should be a movement inside of the next 30 days which will at least give some approximate idea of what may be expected during the fall and winter months. Deliveries are very easy now, and even Basic can be had with significant promptness, while low grade Irons are in large supply and very weak. Subject to conditions to which we have already referred, quotations for deliveries in buyers' yards, eastern Pennsylvania or adjoining districts, would at this time range about as follows:

No. 2 X Foundry	.....	\$22.00 to \$23.00
Gray Forge	.....	19.50 to 20.50
Basic	.....	21.00 to 22.00
Low Phosphorus	.....	27.50 to 28.00

Ferromanganese.—Business is exceedingly quiet, and prices are said to be somewhat firmer at \$61 to \$62 for the last half and about \$64 for spot delivery.

Steel.—There is a very good demand for Steel, and some good sized orders have been taken during the last few days. Specifications are coming in satisfactorily, and mills are kept fully employed. Prices for ordinary Rolling Billets are about \$31.75 to \$32.25 for nearby deliveries, and \$35 to \$37 for Forging Steel.

Plates.—The Plate trade maintains a good position, an unusually large tonnage having been placed during the past week. The orders were not large individually, but they indicate general activity among the boiler shops, bridge works, and in almost all lines in which Plates are required. Prices are firm and unchanged as follows:

	Carload.	Part
	Cents.	carload.
Tank, Bridge and Boat Steel	.....1.85	1.90
Flange or Boiler Steel	.....1.95	2.05
Marine	.....2.20	2.25
Locomotive Firebox Steel	.....2.40	2.45
The above are base prices for 1/4-in. and heavier. The following extras apply:		
3-16-in. thick	.....	\$0.10
Nos. 7 and 8, B. W. G.	.....	.15
No. 9, B. W. G.	.....	.25
Plates over 100 to 110 in.	.....	.05
Plates over 110 to 115 in.	.....	.10
Plates over 115 to 120 in.	.....	.15
Plates over 120 to 125 in.	.....	.25
Plates over 125 to 130 in.	.....	.50
Plates over 130 in.	.....	1.00

Structural Material.—The demand is very satisfactory, and, although there are no large orders, the demand for small and medium size lots is very good. This is shown by the extension of time, which is generally required for deliveries on new business, which runs from three to four or five weeks. Prices remain at 1.85c. to 2c., according to specifications.

Bars.—There is a slightly improved feeling in the Bar trade, and the mills have taken in some fair sized orders, in most cases at 1.85c. for Best Refined Iron. Steel Bars for prompt shipments are about the same as Refined Iron, and a tenth less for 60 to 90 days' delivery.

Sheets.—There is no abatement in the demand for Sheets, and the mills are fully employed, and somewhat pushed for prompt shipments. Prices are steady at about the following figures for mill shipments and a tenth more for small lots: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20c.

Old Material.—The market shows no recovery, but on the contrary new low records have been made on some articles. Steel, for instance, has sold down to \$17, and there is plenty more to be had at \$17.25 to \$17.50. Consumers fight shy of the entire market, so that prices are very irregular. For the time being, the quotations given below fairly represent the market for deliveries, in buyers' yards:

Steel Crops	.....	\$17.50 to \$17.75
No. 1 Steel Scrap	.....	17.00 to 17.50
Low Phosphorus	.....	23.00 to 23.50
Old Steel Axles	.....	20.50 to 21.00
Old Iron Axles	.....	29.00 to 30.00
Old Iron Rails	.....	22.50 to 23.00
Old Car Wheels	.....	25.00
Choice No. 1 R. R. Wrought	.....	19.00 to 19.50
No. 1 Yard Scrap	.....	17.00 to 17.50
Long and Short	.....	17.00
Machinery Scrap	.....	19.00 to 19.50
Wrought Iron Pipe	.....	15.50 to 16.00
No. 1 Forge Fire Scrap	.....	15.50 to 16.00
No. 2 Light	.....	9.50 to 10.00
Wrought Turnings	.....	15.00 to 15.50
Stove Plate	.....	15.50 to 16.00
Cast Borings	.....	14.00 to 14.50
Grate Bars	.....	15.00 to 15.50

At only two blast furnace plants in the United States is anthracite coal now used alone as fuel—Lock Ridge of the Thomas Iron Company in the Lehigh Valley and the Allentown Rolling Mills' furnaces at Allentown, Pa.

Pittsburgh.

PARK BUILDING, July 31, 1907.—(By Telegraph.)

Pig Iron.—On the United States Steel Corporation's offer, open for a week, to take 15,000 tons of Bessemer Pig Iron for August delivery at \$22, Valley furnace, the Bessemer Pig Iron Association has found this tonnage, chiefly from furnaces which are changing from Basic to Bessemer on account of the plentiful supply of Basic, and 10,000 tons of this has been definitely closed by the corporation, while the remaining 5000 will go either to the corporation or to another Pig Iron producer, who has asked for it, to apply on outstanding obligations. We note a sale of 1000 tons of Bessemer, for August delivery, at \$22.25, Valley furnace, and a slightly larger tonnage at the same price. We quote Bessemer Pig Iron at \$22 to \$22.25, Valley furnace, for nearby delivery, depending on tonnage. The Bessemer Pig Iron average for July is tentatively figured at about \$22.40, Valley furnace, or about 85 cents below the June average. The considerable tonnage of Basic which has been hanging over the market is not sold, and the Basic market is purely nominal. The Westinghouse Electric & Mfg. Company has inquired for 400 tons of Forge and 100 tons of Bessemer Iron for prompt delivery, but may take a somewhat larger tonnage if the price is satisfactory. We quote Forge, nominally, \$21.50 to \$22, Valley furnace, and No. 2 Foundry, \$22.50, Valley furnace, although some furnaces speak of higher prices. The United States Cast Iron Pipe & Foundry Company bought 5000 to 6000 tons of Southern Forge and Nos. 3 and 4 last week, for nearby delivery, for several of its Southern plants, but took none for Columbus. It paid about \$17.50, Birmingham, for Forge and \$18 for No. 4.

Steel.—About 5000 tons of Open Hearth Billets of various sizes from the Milliken plant are being offered subject to specifications. Deliveries on Billets and Sheet Bars are better. We quote for regular mill shipments, delivered Pittsburgh, Bessemer Billets at \$30, and Open Hearth at \$31.50. Forging Billets are \$34 to \$35, f.o.b. Pittsburgh, and Sheet Bars \$31, f.o.b. Pittsburgh or Youngstown.

(By Mail.)

The market is absolutely devoid of developments of any significance. It is understood that the dock strike is about broken, but this is of moment, marketwise, chiefly to some Pig Iron brokers who sought to use the strike as a means of bulling the market. The Carnegie Steel Company has taken the Plates and Shapes for another lake boat, to be built next season, involving about 3100 tons, this being the eleventh such contract it has booked on this movement. The second thousand of the Burlington Steel car order is still under negotiation with a Pittsburgh car builder, and there is no other car business reported. Current specifications are quite good, and specifications on Shapes for the American Bridge Company last week were decidedly above the average. New business is light in all Finished Steel lines.

Ferromanganese.—Trade is very dull, and the market is being made by brokers who forego the usual margin and are ready to undersell the regular importers. We quote prompt carloads at \$63 to \$65, delivered, Pittsburgh, and round tonnages for fourth quarter at \$60 to \$61, Pittsburgh.

Muck Bar.—The market is very quiet but strong, as the mills have little to offer. We quote prime All Pig Muck Bar at \$37 to \$38, delivered, Pittsburgh.

Skelp.—Prices are largely nominal, producers being well sold up and consumers well covered. We quote for forward delivery: Grooved Steel Skelp, 1.90c. to 1.95c.; Sheared Steel Skelp, 1.90c. to 2c.; Grooved Iron Skelp, 2.20c. to 2.25c., and Sheared Iron Skelp, 2.30c. to 2.35c., these prices being f.o.b. maker's mill.

Rods.—The demand is light, with Bessemer Rods at \$36.50 to \$37, Pittsburgh, and Open Hearth at \$37.50 to \$38.

Steel Rails.—No important orders for Standard Rails have been booked by the local mills in the past fortnight, and there is not much inquiry. Light Rails continue in good demand, sales being up to the average. Prices on Light Rails continue firm on the old basis, which has prevailed since the advance of last December, and the market has not been affected by the reduction of \$1 a ton, recently made by Chicago mills. We quote Light Rails as follows: \$33 to \$34 for 20 to 45 lb.; \$34 to \$35 for 16-lb., and \$35 to \$36 for 12-lb., at mill. Angle Splice Bars are held at 1.65c., and Standard Section Rails at \$28, at mill.

Sheets.—The mills continue to catch up on deliveries of Black and Blue Annealed Sheets, but are still far behind on Galvanized. The demand for the latter keeps up extremely well, especially considering the steady decline in the Spelter market, and the mills are still far behind in deliveries. Prices are quite well maintained on all grades of Sheets. We quote: Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.; Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27,

3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 28 gauge Painted Roofing Sheets at \$1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, \$3.25 per square, for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Plates.—As above noted, the second thousand of the Burlington inquiry for 2000 Steel cars is still in negotiation with a Pittsburgh interest, and there is no other Steel car business of importance. The Carnegie Steel Company has just received specifications for the Plates for the 1500 cars ordered several weeks ago by Steel Corporation roads, while in the past week it has booked the Plates and Shapes for another lake boat, from the American Shipbuilding Company. New business in Plates is light, but specifications are received in fair volume. We quote: Tank Plates, $\frac{1}{4}$ -in. thick, $6\frac{1}{4}$ in. up to 100 in. wide, 1.70c. to 1.80c., base, at mills, Pittsburgh. Extras over this price are as follows:

Extra per
100 lb.

Gauges lighter than $\frac{1}{4}$ -in. to and including 3-16-in.	
Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of $\frac{1}{2}$ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—Specifications on Shapes by the American Bridge Company in the past week were much above the normal. The market is without interesting developments. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x $\frac{1}{4}$ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3 $\frac{1}{2}$ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Hoops and Bands.—The market is very firm, and specifications are good, but there is not much new business. We quote: Steel Hoops, 2c., and Bands for all purposes at 1.60c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

Tin Plate.—No authoritative announcement can be made as yet as to enlargements of Tin Plate plants by the leading interest, due to the abandonment of the Star Mill, in Pittsburgh, early this year, and the abandonment on July 1 of the Falcon Mill at Niles. The specialties heretofore made at Niles will in future be made at Martins Ferry, but without increase in the number of mills at that point. It is possible that the Monongahela and one or two other small plants may be abandoned later, but no announcement has been made as yet. The Shenango Mill, at New Castle, is about ready to start after the installation of automatic stokers and other improvements. The American Sheet & Tin Plate Company will have capacity to make as much Tin Plate in the second half as in the first half, when it broke all its production records. The spot demand for Tin Plate is not very active, but deliveries are well taken and the market is firm. We quote for all deliveries \$3.90 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

Bars.—The Conciliation Board on the Iron wage scale is in session at Cambridge Springs, Pa. Last Saturday the workers concluded presenting their side of the case, and this week the manufacturers are presenting their side. A recommendation is hardly likely to be made before next week, and there is until the last day of the week, Saturday, for a conclusion in accordance with the terms of the conciliation arrangement. Iron Bars are very quiet, and former prices are being shaded a trifle in some instances, but we still quote the general market at 1.70c. to 1.75c., Pittsburgh, depending on tonnage and specifications. In Steel Bars specifications continue satisfactory, with most mills filled until nearly the end of the year. Steel Bars are 1.60c., Pittsburgh.

Spelter.—This metal continues its uninterrupted decline, and is very quiet this week. We quote carloads to 100 tons at 5.92 $\frac{1}{2}$ c. to 5.95c., Pittsburgh, for prompt delivery.

Merchant Steel.—This branch of business is rather quiet. We quote: Smooth Finished Machinery Steel, 1.85c.

to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c., for ordinary grades, and 10c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. off in carloads, and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The market on Spikes is fairly active, considering the general dullness, and manufacturers are in a comfortable position, in view of the greater tonnage which must come when large Rail business for next year is again taken up. The demand for Boat and other Spikes is very good. We quote Standard Spikes at \$2.20, but occasionally \$2.15 is done on a very desirable order. Small Spikes are 2.35c. to 2.50c., depending on tonnage, &c.

Merchant Pipe.—Pressure upon the mills continues strong for Merchant Pipe, prompt deliveries still commanding premiums. Discounts on Steel Pipe are as follows:

Merchant Pipe.

Jobbers, carloads.
Steel.

Black. Galv.

	Black.	Galv.
$\frac{1}{8}$ to $\frac{1}{4}$ in.....	.65	.49
$\frac{3}{8}$ in.....	.67	.53
$\frac{1}{2}$ in.....	.69	.57
$\frac{5}{8}$ to 6 in.....	.73	.63
7 to 12 in.....	.70	.55
Extra strong, plain ends:		
$\frac{1}{8}$ to $\frac{3}{8}$ in.....	.58	.46
$\frac{1}{2}$ to 4 in.....	.65	.53
$\frac{3}{4}$ to 8 in.....	.61	.49
Double extra strong, plain ends:		
$\frac{1}{2}$ to 8 in.....	.54	.43

All above discounts are subject to 1 point on the base and 5 per cent. on the net.

Official discounts on Iron Pipe, which are shaded one-half point or more to the large trade, are as follows, f.o.b. Pittsburgh:

Standard Genuine Iron Pipe.

Black. Galv.

	Black.	Galv.
$\frac{3}{4}$ to 6 in.....	.67	.57
$\frac{1}{2}$ in.....	.62	.50
$\frac{3}{8}$ in.....	.60	.42
$\frac{1}{4}$ and $\frac{3}{8}$ in.....	.58	.42
7 to 12 in.....	.62	.47

Extra Heavy Iron Pipe, Plain Ends.

	Black.	Galv.
$\frac{1}{2}$, $\frac{3}{4}$ and $\frac{5}{8}$ in.....	.62	.40
$\frac{1}{2}$ to 4 in.....	.59	.47
$\frac{3}{4}$ to 8 in.....	.55	.42

Boiler Tubes.—The market is only fairly active. Prices are firm, as follows:

Boiler Tubes.

Iron. Steel.

	Iron.	Steel.
1 to 1 $\frac{1}{2}$ in.....	.42	.47
1 $\frac{1}{2}$ to 2 $\frac{1}{4}$ in.....	.42	.59
2 $\frac{1}{2}$ in.....	.47	.61
2 $\frac{1}{2}$ to 5 in.....	.52	.65
6 to 13 in.....	.42	.59
2 $\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 $\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.		

Iron and Steel Scrap.—Values continue to soften, and while we have reduced our quotations materially it is hard to quote prices exactly on some grades, on account of there being so little movement. In Busheling Scrap, for instance, there has been hardly anything done for some time, most of the material usually graded under this head going to the Open Hearth Steel works. The Carnegie Steel Company recently paid a price equivalent to \$19.15, delivered Clairton, on a round lot of good Melting Scrap to a railroad, but has not for a long time bid more than \$18 to dealers for the class of Melting Scrap it gets from them, and its recent purchases of about 4000 tons on this basis for August and September delivery will probably take it out of the market for some time. Dealers have picked up some Heavy Melting Stock at \$17.75, and would not in any case pay over \$18. While the dealers would hardly sell at the latter price, the mills are not making any open bids. Re-rolling Rails have sold to a mill in Pittsburgh at \$18.75, delivered. We revise quotations as follows: Heavy Steel Scrap, \$17.75 to \$18 for Pittsburgh, Steubenville and Sharon delivery; No. 1 Railroad Wrought Scrap, \$17.50 to \$18, and No. 2, \$17 to \$17.50; Bundled Sheet Scrap, \$16; No. 1 Busheling Scrap, \$18; No. 2 Busheling Scrap, \$15; Old Steel Rails, short pieces, for Open Hearth purposes, \$18; Old Steel Rails, re-rollers, \$18.75; Low Phosphorus Melting stock, \$22.50 to \$23; Cast Iron Borings, \$13.25 to \$13.75; Stove Plate, \$16; Old Car Wheels, \$26; Steel Axles, \$21.75 to \$22; Grate Bars, \$16; No. 1 Cast Scrap, \$20; all above prices are per gross ton, f.o.b. Pittsburgh.

Coke.—While the market is quiet as regards actual transactions, the tone is firm, and a trifle firmer than it was a week ago. All the Coke operations are suffering from a shortage of labor, which has acted to adjust production to the reduced demand. There is very little prompt Coke being bought, and there is scarcely anything being done on contracts for Furnace Coke. We quote strictly Connellsville Furnace Coke for prompt shipment at \$2.40 to \$2.50 at oven, and contracts nominally at \$2.50 to \$2.60. We quote 72-hr. Connellsville Foundry Coke at \$3 to \$3.25, at oven.

Cincinnati.

FIFTH AND MAIN STS., July 31, 1907.—(By Telegraph.)

Pig Iron.—In the absence of scarcely any business prices continue to be about as they were last week. There are practically no inquiries afloat for any tonnage worthy of mention. A melter in Indiana, who several weeks since bought 200 or 300 tons, is again said to be looking around for the same tonnage, presumably to tide over immediate requirements. This is perhaps an index to the situation, and represents the feeling of the trade at large, as regards buying for some distance in the future. There is perhaps enough resale Iron coming forward at intervals to keep the spot market running smoothly, and which has a tendency to keep prices on a level. Shipments are reported to be moving forward in good condition, and consumers are receiving contract Iron in a satisfactory manner. High Silicon Irons are said to be in fair demand with the available supply limited. Prices for these grades are firm. The lower grades are in light demand, with prices somewhat erratic. The developments in the Lake Superior strike situation are causing some uneasiness, and considerable speculation is rife as to the probable results. Freight rates from the Hanging Rock District to Cincinnati are \$1.20, and from Birmingham \$3.25. We repeat quotations as follows for early delivery, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$24.25 to \$24.75
Southern Coke, No. 2.....	23.75 to 24.25
Southern Coke, No. 3.....	23.25 to 23.75
Southern Coke, No. 4.....	22.50 to 23.00
Southern Coke, No. 1 Soft.....	24.25 to 24.75
Southern Coke, No. 2 Soft.....	23.75 to 24.25
Southern Coke, Gray Forge.....	21.25 to 21.75
Southern Coke, Mottled.....	20.25 to 20.75
Ohio Silvery, 8 per cent. Silicon.....	30.15 to 30.65
Lake Superior Coke, No. 1.....	24.15 to 24.65
Lake Superior Coke, No. 2.....	23.65 to 24.15
Lake Superior Coke, No. 3.....	23.15 to 23.65

Car Wheel Irons.

Standard Southern Car Wheels.....	\$29.00 to \$29.50
Lake Superior Car Wheels.....	27.50 to 28.00

Coke.—Most of the business now visible is transient, and the market shows no special activity. Prices are apparently well maintained and the supply is adequate to requirements. We quote best brands of Connellsville and Virginia Foundry \$3 to \$3.25, f.o.b. ovens.

Finished Iron and Steel.—Specification in Structural lines continue to show great strength, and deliveries are more extended than ever. One of the large Eastern concerns is now out of the market on Structural Shapes, Sheared Plates, Bars and Billets. Plans and specifications are now out for the new Provident Savings Bank & Trust Company's building, which will require about 2000 tons and which is the only Structural business of any note now pending here. Prices are firm and unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.80c., with half extras; small lots from store, 2c., with full extras. Steel Bars, carload lots, 1.75c., half extras; smaller lots from store, 1.95c., with full extras. Base Angles, carload lots, 1.85c. Beams and Channels, carload lots, 1.85c., base. Plates, ¼-in. and heavier, carload lots, 1.85c., base, and smaller lots from store, 2.25c. Sheets, No. 16, carload lots, 2.05c., and smaller lots from store, 2.60c.; No. 14, carload lots, 1.95c., and smaller lots from store, 2.50c. Steel Tire, 1 x ¼ in. or heavier, 1.95c., in carload lots.

Old Material.—The market is quiet and featureless, but prices are practically unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows:

No. 1 R. R. Wrought net ton.....	\$16.50 to \$17.00
Cast Borings, net ton.....	9.00 to 9.50
Steel Turnings, net ton.....	12.00 to 12.50
No. 1 Cast Scrap, net ton.....	17.50 to 18.00
Old Iron Axles, net ton.....	25.50 to 26.00
Old Iron Rails, gross ton.....	24.00 to 24.50
Old Steel Rails, long, gross ton.....	17.50 to 18.00
Relaying Rails, 56 lb. and up, gross ton.....	27.50 to 28.00
Old Car Wheels, gross ton.....	24.00 to 24.50
Low Phosphorus Scrap, gross ton.....	19.50 to 20.00

Cleveland.

CLEVELAND, OHIO, July 30, 1907.

Iron Ore.—Ore shipments from Ashland, Marquette and Escanaba are very heavy, but with the docks at Duluth, Superior and Two Harbors tied up by the strike of the Ore handlers, a comparatively small amount of Ore is being brought down the lakes. The effects of the strike are being most seriously felt at this end of the lakes by the shipping interests. Forty-nine vessels of the Pittsburgh Steamship Company have been laid up, and unless the strike is settled in a day or two more of that company's boats will go out of commission. Many big carriers of the independent companies have also dropped out, and some of those that are still running are being operated at a loss. A number of steamers have been brought down light from the head of the lakes to load with coal, and such shipments have been unusually heavy during the past few days. The Ore handlers' strike so far has caused but little uneasiness among ship-

pers and furnacemen. A speedy settlement is looked for, and possibly the movement during the balance of the season can make up much of the shortage caused by the tie up. The falling off on Ore shipments up to date because of the strike is estimated at 2,000,000 tons, and it will reach about 3,000,000, unless a settlement is effected by the end of this week. Furnaces are well supplied with Ore, so that there is not much danger of their operations being interfered with, although in some cases they may be forced to substitute different grades of Ore. The Ore market is very quiet. Prices are as follows at Lake Erie docks per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range non-Bessemer, \$4.25; Mesaba non-Bessemer, \$4; Siliceous Bessemer, \$2.75; Siliceous non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—The market is quiet, but prices are stationary, with no tendency toward further weakness. The only demand is for Foundry Iron in small lots for prompt delivery, sales being mostly in one and two carload lots. Foundries that are not fully covered for the balance of the year are disposed to buy spot Iron as they need it, and there are no inquiries for Foundry Iron for the last quarter. Foundries as a rule are melting their Iron as fast as received, and many of them are urging more prompt deliveries by the furnaces, many of which are behind on their contracts. A number of the furnaces, particularly in the Valley District, are reported to be running badly and not turning out their usual product. This is attributed largely to the inferior quality of Ore that is coming from some of the mines this season, which is not yielding the usual percentage of Iron. Although some of the furnaces are so well sold up that they are practically out of the market for the balance of the year, others are in shape to sell all the spot Iron that is needed. The furnace that has done the heaviest business during the week reports sales amounting to about 1500 tons of Foundry Iron, all for prompt shipment. The sales of spot Iron were made at \$23.50 to \$24, at furnace, for No. 2 Foundry. A Toledo furnace that has been selling No. 2 Foundry at \$23.50 for spot delivery is now holding at \$24. For forward delivery we quote No. 2 Foundry Iron at \$22.50 to \$23, Valley furnace. Furnaces are offering No. 2 Foundry Iron for the first half of 1908 at \$21.50, at furnace. Quotations for the fourth quarter of 1907, f.o.b. Cleveland, are as follows:

Bessemer.....	\$23.40
Northern Foundry, No. 1.....	\$23.50 to 24.00
Northern Foundry, No. 2.....	23.00
Northern Foundry, No. 3.....	22.50
Gray Forge.....	22.00

Coke.—The demand is a little better, and prices are firmer. Foundry Coke is quoted at \$3 to \$3.25, at oven, for prompt delivery, and \$3.15 to \$3.25 on contracts. We quote Furnace Coke at \$2.60, at oven. One interest is holding Connellsville Furnace Coke at \$2.75 to \$3.

Finished Iron and Steel.—The heavy specifications that continue to come in for all kinds of Finished Material inspire a strong feeling of confidence, and make the general situation satisfactory. All the mills report a heavier demand for material on contracts than usual at this time of the year. Not a great deal of new business is being booked, the orders that have been placed during the week being nearly all small ones. With good orders coming in steadily the mills are still well filled up, and little change is noted in deliveries. Warehouse business keeps up well for the summer months. The American Shipbuilding Company closed a contract during the week for 3100 tons of Plates and Shapes for another lake boat for the spring of 1908 delivery. This company has placed contracts during the past few weeks with the leading interest for 23,610 tons of Plates for boats under contract, and other Plate contracts for boats placed with the same interest by Lake Erie shipbuilding concerns bring the total boat tonnage to date up to 28,000. The general demand for Plates continues strong, and while some mills can make a little better deliveries others are further behind than they were a few weeks ago. One mill that was able to take orders a short time ago for Universal Plates for delivery in about four weeks is now well filled up, and does not promise shipments within three months. One mill doing a premium business reports that the demand for Plates for quick shipment at a premium of \$2 a ton is still good. There is an inquiry in the local market for 1000 tons of Plates for prompt shipment for a small lake boat. In spite of the heavy specifications for Bars on old contracts during the latter part of June there is a good demand for Steel Bars. While deliveries on sizes ranging from ¾ to 1½ in. can be secured in four to six weeks, the smaller and larger sizes are scarce, and much more time is required for shipment. We quote Steel Bars for future delivery at 1.70c., Cleveland, for carload lots, and Iron Bars at 1.75c., Cleveland, for carload lots. The demand for Structural Material in this territory has improved. Practically all the material is needed for buildings. There is scarcely any bridge work projected, and the only local structure projected requiring any considerable tonnage that has not already been purchased is the Pope Building, that will take about 3000 tons. The mill price on Beams and Channels is 1.80c., base, for carload lots, Cleveland. The

warehouse price is 2.25c. to 2.50c. Forging Billets are in fair demand, and are quoted at \$36 to \$38, Cleveland, for prompt shipment. A sale of 1800 tons of Standard Section Rails has been made to a Michigan traction line for August delivery. The leading interest can now make deliveries on Cold Rolled Black Sheets in from six to eight weeks, but deliveries on Galvanized Sheets are as bad as ever. Stock prices are firm and unchanged. Steel Bars are selling from warehouse at 1.95c., and Iron Bars at 2c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.30c.; No. 28 One Pass Cold Rolled, 3.05c.; No. 28 Galvanized, 4.05c. Jobbers' price on Boiler Tubes, 2½ to 5 in., is 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—The market continues very dull, although there are a few more inquiries than during the previous week. Cast Scrap is decidedly weaker, and other prices show a further declining tendency, although quotations, which are for the most part nominal, show scarcely any change outside of Cast Scrap. Local mills have bought a small tonnage of Scrap during the week to supply their immediate needs. The mills are apparently looking for a further decline in prices and are making no contracts for future delivery. Dealers are well supplied and are refraining from making further purchases until the demand is improved. Foundries still have all the Scrap they need under contract and are not in the market. The Baltimore & Ohio Railroad has a list out of about 3000 tons for sale this week. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$16.50 to \$16.75
Old Iron Rails.....	24.00 to 24.50
Steel Car Axles.....	21.50 to 22.00
Old Car Wheels.....	23.00 to 24.00
Relaying Rails, 50 lb. and over.....	29.00 to 31.00
Relaying Rails, under 50 lb.....	31.00 to 32.50
Heavy Melting Steel.....	16.00 to 16.50
Railroad Malleable.....	18.75 to 19.25
Agricultural Malleable.....	15.50
Light Bundled Sheet Scrap.....	14.50 to 15.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$26.00 to \$27.00
Cast Borings.....	10.50 to 11.00
Iron and Steel Turnings and Drillings.....	12.50 to 13.00
No. 1 Bushing.....	14.50 to 15.00
No. 1 Railroad Wrought.....	16.00 to 16.50
No. 1 Cast.....	18.00 to 19.00
Stove Plate.....	15.00 to 15.50
Bundled Tin Scrap.....	10.00

New York.

NEW YORK, July 31, 1907.

Pig Iron.—There has been more activity and some larger transactions in Foundry Iron have been put through. One machinery concern in New England has bought a total of 5000 tons, and there are several inquiries in the market for like and for slightly larger quantities. The market, however, is weaker, particularly for forward delivery, for which Northern No. 2 is offered on the basis of \$21, at furnace. For August delivery we quote for Northern Irons, at tidewater: No. 1 Foundry, \$23.25 to \$23.50; No. 2 Foundry, \$22.25 to \$22.75, and No. 2 Plain, \$21.75 to \$22.25. No. 2 Southern Iron is nominally \$24.50 to \$25.

Steel Rails.—The mills have booked few important orders recently. One cause of delay is the uncertainty about specifications in the case of several leading roads. On the return from Europe of G. L. Peck, chairman of the American Railway Association committee, a conference will be held between the two sides, and some pending questions will probably be settled. A number of small orders for standard sections are reported, and there is a good business in light rails. A number of roads have bought fair sized lots of Steel ties, and this business is on the increase.

Structural Material.—The inflow of specifications is steady, and there is a generally favorable report from the mills as to this branch of the trade. The new work coming up in New York City is of good proportions, one contract let in the past week being that for the new freight sheds at Piers 54 and 56, amounting to 7000 tons, the award being made to Snare & Triest, who have already let the contract for the fabricated Steel. Next month 13,000 tons additional of pier shed work will be let, and from 10,000 to 20,000 tons more is expected to come up later in the year. The school building work in Greater New York, previously referred to, is being proceeded with as rapidly as plans can be made. About 500 tons is required to a building, and from 30 to 40 buildings will be let in the present campaign of construction. The New Haven bridge, at Providence, R. I., 1400 tons, was let to the Phoenix Iron Works. Some further railroad work in the West has been let, including 3000 tons for the Frisco shops, at Springfield, Mo., and some additional bridge work for the Western Pacific, the McClintic-Marshall Construction Company having booked a considerable tonnage. For Steel towers for wireless telegraph stations in Alaska purchases have been made by the Government, the total being above 1500 tons. The American Bridge Company's bookings for July are expected to reach

50,000 tons. Quotations on mill shipments, tidewater delivery, are as follows: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.90c.; Bulb Angles and Deck Beams, 2c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Sales out of stock, of material cut to length, are made at 2¼c. to 2½c.

Bars.—While no large buying movement is reported, a growing disposition to stock up has led to sufficient purchases in a small way to make the volume of business in Bar Iron in July show up very favorably as compared with the quantity booked in June. The manufacturers who are in a position to meet existing conditions are therefore taking a more favorable view of the situation, but some Eastern mills have recently closed for the alleged reason that the margin of profit is too small to warrant the continuance of operations. Prices of Best Refined are on the basis of 1.60c. to 1.65c., Pittsburgh, or 1.76c. to 1.81c., tidewater. While Steel Bars are quotable at 1.76c., tidewater, this is for deferred delivery. Premiums are being paid for prompt delivery of both Iron and Steel.

Plates.—Occasionally the local market feels a slight impulse toward more active trade, but ordinarily it is about as dull as midsummer weather can make it. Buyers are showing no disposition to place contracts, as the mills are now making reasonably prompt shipments, and consequently there appears to be no special incentive to make engagements for the future. Quotations are as follows for tidewater delivery: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—Current orders are usually for carloads, although the past week a large consumer asked prices on about 2500 tons of 30 in., and a few other inquiries were received for good quantities of the same and larger diameters. While such inquiries may lead to business, it is probable that they may only be feelers, as consumers persistently talk of waiting for lower prices. The city of Philadelphia opens bids to-day on 1300 tons. No other public lettings of any moment are at present in sight. Deliveries are being made more promptly by a number of foundries, although a few are still unable to make shipments of small sizes, until late in the fall. Carload lots of 6 in. Pipe are quoted at \$34.50 to \$35, per net ton, at tidewater.

Old Material.—The embargoes on shipments of Scrap to eastern Pennsylvania Steel works which went into effect about July 1 were lifted in most cases last week, and this has permitted the movement of some Old Material which had been held up. Partly from this cause and partly through the cleaning up of stocks of other consumers, inquiries have been somewhat better the past two days. So far there has not been any marked accumulation of stocks in local dealers' hands, and if the demand should improve to any extent it would have an immediate effect in strengthening prices. We quote per gross ton, f.o.b. New York, as follows:

Old Girder and T Rails for Melting.....	\$15.00 to \$15.50
Heavy Melting Steel Scrap.....	14.75 to 15.25
Old Steel Rails, rerolling lengths.....	17.75 to 18.25
Relaying Rails.....	27.00 to 27.50
Old Iron Rails.....	22.50 to 23.00
Standard Hammered Iron Car Axles.....	28.00 to 28.50
Old Steel Car Axles.....	19.00 to 19.50
No. 1 Railroad Wrought.....	17.50 to 18.00
Iron Track Scrap.....	15.50 to 16.00
No. 1 Yard Wrought, long.....	15.50 to 16.00
No. 1 Yard Wrought short.....	15.00 to 15.50
Light Iron.....	9.75 to 10.25
Cast Borings.....	11.25 to 11.75
Wrought Turnings.....	13.25 to 13.75
Wrought Pipe.....	13.25 to 13.75
Old Car Wheels.....	22.50 to 23.00
No. 1 Heavy Cast, broken up.....	17.25 to 17.75
Stove Plate.....	14.75 to 15.25
Grate Bars.....	12.75 to 13.25
Malleable Cast.....	18.00 to 18.50

Metal Market.

NEW YORK, July 31, 1907.

Pig Tin.—The let-up in activity which was noted last week continues, and with the exception of one day business has been dull. The major part of the turnover during the week was in future deliveries and shipments from London. The situation here is rather unusual, as there are practically only two sellers in the market, but these have a comfortable supply of the metal, so that no shortage is likely to develop in the near future. On July 25 sales of spot Tin were made at 41.10c., and Tin from the Minneapolis at 40.45c. On July 26 the premium on spot Tin disappeared and sales were made for both spot and forward delivery at 40.40c. The best day of the week was July 30, when about 200 tons of Tin were traded in at prices varying from 39.87½c. to 40c., and the same price ruled for Minnehaha Tin, due August 5. The business on July 30, done at 40.20c., was largely influenced by the pending Banca sale, many consumers having the idea that the price of spot Tin had been allowed to drop off, hoping that the Banca sale would go at lower figures. The Banca sale, which occurred in Holland this morning, went at the average figure of 40.50c., c.i.f.

New York, which is considered high. Tin can be had to-day at 40.25c. The arrivals this month have been large, amounting in all to 4392 tons, and there are afloat for American ports 1666 tons. The London market closes at £182 for spot and £181 for futures.

Copper.—Consumers of Copper refuse to buy, although lower prices have been named, and the producers are anxious sellers. Small sales of Electrolytic have been made in Europe on a basis of 20.50c. and 20.75c., and a few small lots were offered at 20.25c. on Tuesday, but there were no takers. It is apparent that the falling off in business is greater than at first believed. The metal which consumers purchased early in the year to last them through April, May and June has been sufficient for their requirements during July as well. There have been rumors during the week that a leading Lake producer offered metal in Europe at 21.50c., and was unable to secure any business at this figure. This lacks confirmation. High grade Lake could be had at that figure, however. From the present outlook it would not be surprising if the long hoped for buying movement did not set in until even lower prices for Electrolytic than 20c. were reached. Some of the producers are of the opinion that there will be no pronounced improvement in the Copper trade until financial conditions change for the better—that is, until it will be possible to raise funds at moderate rates for the extension of existing electric lines and electrifying old lines. All quotations are more or less nominal at present, but the general market would be represented by the following prices: Lake, 21c. to 22c.; Electrolytic, 20c. to 21c.; Casting Grades, 19.50c. to 20c. The largest sellers of Electrolytic, those controlling at least 75 per cent. of the North American output, still adhere to their old quotation of 22c. for Electrolytic. It must be remembered that sales for European consumption are made at from 1/2c. to 3/4c. below the figures quoted American consumers. The exports are light, amounting to less than 15,000 tons this month. The German consumption of Copper shows a slight increase for the first five months of this year, being 47,979 tons, against 46,903 tons last year. The London market is lower, closing weak and unsettled at £87 for spot, and £82 10s. for futures. Best Selected is also much lower at £94 10s., equivalent to 19.75c., London. It is almost impossible to sell Refined Copper at any figure in Europe.

Pig Lead.—The market is weak, with no demand for spot Lead in New York, but there are offerings at 5.25c. Shipments, however, could be secured at 5.15c. The market in St. Louis is soft, and there is no difficulty in securing the metal at 5c. There is a general belief among well informed dealers that the leading interest may reduce its price either 1/4c. or 1/2c. per lb. in the near future.

Spelter.—There is practically no business offering, and shipments can be had at 5.95c., New York. In the West there are free offerings at 5.80c., St. Louis.

Ferroalloys.—The demand for Ferroalloys has fallen off and business is quiet. Fifty per cent. Ferrosilicon is held at \$104, but sales have been made at concessions from this figure. Ferromanganese is dull and unchanged, being quoted at \$61 to \$63, Pittsburgh.

Tin Plate.—New business is dull, and shipments are coming forward more rapidly. Prices are without change at \$3.90, f.o.b., Pittsburgh, and \$4.09, f.o.b. New York, for 100-lb. 10 Coke Plates.

Antimony.—Prices are again lower, without even rumors of business. Cookson's can be had at 11c., Hallett's at 10 1/2c., and outside brands at 9 1/2c. Probably if any one wanted Antimony and bid at something under these figures for a round lot he would have no difficulty in securing all the metal desired.

Old Metals.—Business in old metals is almost at a standstill. Dealers are afraid to accumulate stocks, and find difficulty in disposing of what little they have been compelled to take on contract. Prices are considerably lower than last week, especially for Heavy Machine Composition and Light Copper Bottoms. It is rumored that sales of Heavy Cut and Crucible Copper have been made at considerably less than 19c. Dealers' selling prices are as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	19.25 to 19.50
Copper, Heavy and Wire.....	18.50 to 18.75
Copper, Light and Bottoms.....	16.75 to 17.00
Brass, Heavy.....	12.00 to 12.50
Brass, Light.....	9.50 to 10.00
Heavy Machine Composition.....	16.50 to 17.00
Clean Brass Turnings.....	12.00 to 12.50
Composition Turnings.....	15.00 to 15.50
Lead, Heavy.....	4.75
Lead, Tea.....	4.37 1/2
Zinc Scrap.....	5.25

The San Francisco offices of the American Sheet & Tin Plate Company will, after August 1, be located in the Crocker Building.

Marks Lissberger & Son, Inc., announce they have consolidated their New York and Brooklyn plants, and hereafter all communications should be sent to 281 Borden avenue, Long Island City, N. Y.

Iron and Industrial Stocks.

NEW YORK, July 31, 1907.

The market has shown a tendency to follow the leadership of the United States Steel stocks. When these stocks have receded the other industrial stocks have gone with them, and when the former have advanced the others have likewise stiffened. The United States Steel stocks the past few days have been notably strong, due to the widespread expectation that the report of earnings for the second quarter would disclose a highly prosperous condition for the corporation. When the report appeared, and the showing was much better than anticipated, stocks promptly declined. The range of active stocks from Thursday of last week to Tuesday of the present week has been as follows: United States Steel common 36 to 37%, preferred 100% to 100%; Car & Foundry common 42 3/4 to 44, preferred 100 to 101; Locomotive common 58 to 60 1/4; Colorado Fuel 31 1/4 to 33; Pressed Steel common 35 to 35 3/4, preferred 91 1/2 to 92 1/2; Republic common 27 3/4 to 28 3/4, preferred 83 to 84; Sloss-Sheffield common 56 1/2 to 57; Cast Iron Pipe common 35 3/4 to 36 3/4; Can preferred 52 3/4 to 53 1/2. Small transactions are reported in Steel Foundries preferred at 39, Railway Spring common at 42 1/2 and Tennessee Coal at 140. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 35 3/4, preferred 100%; Car & Foundry common 42 3/4, preferred 101; Locomotive common 57 1/2, preferred 106 1/2; Steel Foundries common 7 1/4, preferred 38 3/4; Colorado Fuel 30 1/4; Pressed Steel common 33 1/2, preferred 92 1/2; Railway Spring common 41 1/2; Republic common 26 3/4, preferred 82; Sloss-Sheffield common 55 1/2; Tennessee Coal 140; Cast Iron Pipe common 35 1/4, preferred 80; Can common 5 1/2, preferred 52 1/2.

A consolidated statement of the Westinghouse Electric & Mfg. Company for three months ended June 30 last shows as follows: Manufacturing profit, \$1,705,825; miscellaneous income, \$237,271; total income, \$1,943,096; less interest, depreciation, &c., \$870,214; net for dividends and surplus, \$1,072,882.

Dividends.—The United States Steel Corporation has declared the regular quarterly dividends of 1 3/4 per cent. on the preferred and 1/2 per cent. on the common stock, the former payable August 30 and the latter September 30.

The Pressed Steel Car Company has declared a quarterly dividend of 1 3/4 per cent. on preferred stock, payable August 7.

The American Shipbuilding Company has declared a quarterly dividend of 1 per cent. and an extra annual dividend of 2 per cent. on the common stock, payable September 2.

Mexican Railroad and Business Notes.

DURANGO, July 24, 1907.—The obstacles in the way of the completion of the so-called merger of the principal railroad systems of Mexico, spoken of by President Diaz in his last message to Congress, appear to have been overcome, and the realization of the project is now within sight. The legal and other routine details are being arranged, a decree having been lately issued by the government in which are given in detail the provisions of the law whereby the government becomes the virtual controller of some 13,000 km. of railroad trackage. The chief provisions of the law are here given, in condensed form:

A company with the title of Ferrocarriles Nacionales de Mexico, having a capital of \$460,000,000, Mexican, is to be organized to take over the railroads included in the arrangement, the incorporators of the new company being the Mexican Government and a number of the shareholders of the different companies absorbed. Of the initial share capital named above \$60,000,000 is first preferred shares, \$250,000,000 second preference shares and \$150,000,000 ordinary shares. It is provided that "among the clauses must be one allotting to the Mexican Government, in consideration of its guaranteeing the payment of principal and interest of the issue of \$372,000,000, Mexican currency, of general mortgage bonds, of its existing holdings in one of the merged corporations which it turns over to the new company and of the aid which it has given toward the latter's organization, a block of the new shares and securities which will give to the Government in its own name a voting majority at the general meetings of the corporation."

Railroad Concessions and Construction.

The line of the Sierra Madra & Pacific Railway has been opened for traffic from Temosachic to Madera, in

the State of Chihuahua, the town last named being headquarters of the Sierra Madre Land & Lumber Company.

The Government has authorized the transfer of the Rio Grande, Sierra Madre & Pacific Railway, now being operated from Ciudad Juarez to Casas Grandes, to the Sierra Madre & Pacific Company, and approved the transfer to the latter of the concessions for the extension of the railroad from Casas Grandes to Temosachic and the construction of a line from Guzman to Cananea, in the State of Sonora.

It is said that the projected line from the city of Queretaro to Acambaro, for which a concession was obtained last year by Manuel Rublo y Arriaga of Queretaro, is in a fair way to be constructed, the financial outlook having improved, and surveys are now in progress.

The United Railways of Yucatan Company has obtained a concession to establish terminal stations and warehouses in Progreso and Mérida. The company has deposited \$10,000 in bonds as a guarantee.

Good progress is being made upon the construction of the Durango & Parral Railway. A number of workmen from the Kansas City, Mexico & Orient have been transferred to the 20-km. extension from Mesa de Sandia, Durango.

The line of the National, between Gonzalez Junction and Acambaro, has been standardized.

An extension of time beyond the dates of the original concession has been granted to the Central Railway Company for the completion of the sections of the Pachuca, Zacualtipan & Tampico Railway.

President J. M. Neeland of the Pan American Railway has completed arrangements with the government of San Salvador for the extension of the line into that country, a subsidy of \$5,000,000 having been promised.

The engineers of the International Railway Company, who for some two years past have been locating a line from Durango to Guadalajara, have arrived in the Jalisco capital, have completed their work.

J. J. D.

A Remarkable Oil Pipe Line.

The Southern Pacific Company has contracted for the construction of an oil pipe line 285 miles long from the Kern River, California, oil fields to tide water at San Francisco. While notable for its magnitude, the undertaking is even more interesting because of the means to be employed for promoting the flow of the dense heavy oils through pipes of ordinary size. The product of these fields, though not of uniform density, is very heavy, its general average being about 14 deg. Baume, and the pipe lines commonly used for the more fluid oils would not answer. To envelope this thick viscous oil within the pipe with a more mobile liquid to afford lubrication and accelerate its travel, advantage was taken of the fact that water, being somewhat heavier than oil, could be separated from it in the pipe and kept at its outer surface by whirling the mass. The required rotative motion, it was found, could be obtained by rifling the pipe, and the line now under construction will be of 8-in. rifled pipe.

The practicability of the scheme was demonstrated by considerable experimenting, originally on pieces of 1/2-in. lead pipe 50 or 60 ft. long, through which oil was pumped—first, without any water and afterwards with the addition of different percentages of water—and the coefficient of resistance to flow determined. Then the lead pipe was twisted at a very flat pitch (1 to 5) and the longitudinal striations or roughnesses on the interior of the pipe, caused by defects of the mandrel on which it was drawn, formed sufficient rifling to reduce the friction coefficient to about one six-hundredth of that in the straight or unrifled pipe. Before trying the experiment on a larger scale the proper pitch of the rifling was determined in the following simple and practicable way:

A cylindrical glass bottle, filled with oil to which about 10 or 12 per cent. of water had been added, was

tightly corked and chucked in a lathe. By revolving it, the minimum speed at which the water enveloped the oil was easily ascertained, the action being readily seen through the glass. From this and the assumed minimum transmission speed in the pipe line, the proper pitch of rifling was easily deduced and found to be nearly 1 in. circumferentially to 5 in. longitudinally. Later investigations have confirmed that this pitch gives the lowest coefficient of friction.

For the next experiment a 3-in. pipe line about 2000 ft. long was laid and rifled by introducing a wire spiral of spring steel, about No. 20 gauge. While the resistance to flow was greatly reduced, it was not so much so as in the twisted lead pipe. Conditions were improved by rifling the 3-in. pipe by indentation with a special machine made at the Southern Pacific Company's Sacramento shops. Four spiral indentations were pressed in from the outside, and the line was laid in a large loop, with glass tubing at intervals for observing the envelopment action of the water. The results obtained correspond very closely to those on the smaller pipe. It is thought that the wire was less satisfactory, due to the probable irregularity of the spiral and cascading over the wire, producing turbulence in the stream. With the plan of rifling adopted there are no sudden changes of form in the interior of the pipe, and when envelopment is once effected the speed of transmission may be considerably varied without affecting the friction coefficient, except to further reduce it with increased velocity.

These experiments lasted several months, and oil was pumped under various conditions of temperature, the amount of water carried and velocity. Then a practical 8-in. line was constructed from Volcan, in the Kern River oil fields, to Delano, a little over 31 miles, with a pumping station at one end. The pipe has six spiral indentations 1/4 in. deep, produced by drawing the pipe through a pair of disks, each carrying six rollers, the rear set tracking with those in front. Successful continuous operation of this line for several months led to the decision to extend the line to tidewater. The pumping stations will be placed closer together, 23 in 285 miles, for the reason that a much increased capacity is desired, and is obtained more economically thus than by enlarging the pipe. In case of accident, breakdown, or diminished demand for oil it is entirely practical to cut out every alternate, or even two intermediate stations, pumping to every third one if necessary, though, of course, with reduced rate of delivery.

The heavy character of the oil required pumps of special design. At each station there will be two for the main line, which will be of the horizontal, compound, duplex, double plunger, pot valve type, with 24 and 42 x 36 in. steam cylinders and 9 1/2 in. diameter plungers. An especially large valve area and small valve lift are necessary in the oil end to avoid cavitation in the plunger cylinders, and insure prompt seating of the valves in so viscous a fluid. It was, therefore, specified that the area through one set of valves should be 100 per cent., or equal to that of the plunger, that the valve should not lift more than 1/4 in. and that it should have a clear opening equal to that through the valve seat. Only one valve is used in each pot, as multiple valves have not been found efficient in the experience of the Southern Pacific Company. The valves will be made of hard bronze with cast steel seats. Two water injection pumps of the same general type, will also be installed in each station. These embody no special features except that they are of extra large capacity to avoid pulsations in the pipe line.

The contract for the pumping plants complete has been let to the George E. Dow Pumping Engine Company, San Francisco, Cal. Three 250-hp. Edgemoor water tube boilers will be installed in each of the 23 stations. The rifled pipe is being made by the National Tube Company, which has installed specially designed machinery for the work. All apparatus for the pumping stations is to be interchangeable. The estimated capacity of the line is 23,000 barrels of heavy oil per 24 hr.

For the facts and data presented in the foregoing *The Iron Age* is indebted to John D. Isaacs, Chicago, consulting engineer of the Harriman lines.

The Machinery Trade.

NEW YORK, July 31, 1907.

The most interesting developments of the week in machinery circles were the machine tool lists sent out by the Department of Docks and Ferries and the large plant projected for Cuba by the Spanish-American Iron Company, the construction of which, it is stated, will necessitate the expenditure of several million dollars. Machinery houses in this district are now submitting bids on part of the equipment for this plant. Numerous other inquiries for small lots of tools were received, which with the volume of orders placed, constituted a good week's business. The railroads have been buying a few tools, but no important railroad business is reported except that placed with the Westinghouse Electric & Mfg. Company by the Central of Georgia Railroad for electric equipment for its new shops at Macon, Ga. Merchants in New York are of the opinion that the present good demand will continue throughout the summer and that by fall there will be greatly increased activity among buyers, particularly the large industrial corporations and railroads. Last week we referred to the hold up of purchases by the New York Central Railroad. It is pointed out that this road has not nearly the machine tool equipment it needs, and, with several of the other roads in the East, must soon come into the market.

The formation of a large company in France to manufacture machine tools, in which a number of large automobile manufacturers are interested, has been announced, and it is stated that the movement was inspired largely because of the fact that French manufacturers have been obliged to import large quantities of American machine tools. A representative machinery man who is largely interested in export trade said this week that American manufacturers have little to fear from such an organization, and he pointed out that the movement clearly indicated that there is a decided demand for machine tools abroad. This should spur American manufacturers on to cementing their foreign connections. As a matter of fact, the machine tools imported last year by automobile manufacturers in France about equaled the purchases of all other industries combined, and it is hardly probable that the French company will be able to supplant the big demand for this line of American made machinery. The fact that a large number of manufacturers in this country specialize on one or two lines would indicate that one company abroad would have considerable trouble in equaling the product of American specialists, and the machinery man in question declared that his company does not for a moment consider that the French company will affect trade to a noticeable extent. There is considerable demand for machine tools in nearly all of the countries of Europe, and according to advices received by parties in the trade who are deeply interested in the foreign market, the demand will continue good for another year, if not longer. The commercial wave of prosperity, it is stated, struck Europe a little later than this country, and consequently will last longer. In some lines the demand for machine tools for export of late has been larger than the supply, and some prospective purchasers on the other side have been obliged to look elsewhere because of delays in delivery here. Deliveries are a little lighter now, however, and export men are able to quote their customers better terms.

Machine Tools for New York Dock Department.

The Department of Docks and Ferries of the city of New York is asking for bids on a good sized list of machine tools, estimates on which are to be submitted to the office of the department, Pier A, at the foot of Battery place, on Friday, August 9. The time allowed for the completion of the contract is 180 days, and the security required is \$11,200. The list, which includes some good sized equipment, is as follows:

One horizontal boring, drilling and milling machine, one full universal radial drill, to drill to the center of a circle 10 in. in diameter; one 36 in. by 10 ft. open side planer, one 15-in. crank slotting machine, one No. 3 universal milling machine, one 800-lb. single frame steam hammer, one special universal grinding machine, one drill grinding machine, one 36-in. planer, one double punch and shear, throat of shear to be 24 in. and throat of punch 18 in.; one set of plate bending rolls, to have a capacity for steel plates $\frac{1}{4}$ in. thick and 84 in. wide; one band saw, with 38-in. wheels; one back geared vertical drilling and boring machine, with capacity to drill $2\frac{1}{4}$ -in. hole; one improved No. 2 mortiser and borer, one No. 2 iron top mill saw table, one triple geared 36 to 60 in. sliding bed gap lathe, one single head threading machine, to cut threads on diameters from $\frac{1}{2}$ to $2\frac{1}{2}$ in.; one shaper, with single traveling head, 17-in. stroke, with cutter bar $8\frac{1}{2}$ in. wide; one pump and accumulator suitable for 1500 lb. per square inch working water pressure, pump to be horizontal duplex, with cylinder 12 x $2\frac{1}{4}$ x 10 in.; one pipe threading and cutting machine, one floor grind-

ing machine, one No. 12 belt driven metal saw, one 14-in. engine lathe, with quick change gear; one 16-in. engine lathe, with quick change gear; one 24-in. engine lathe, with quick change gear; one 18-in. engine lathe, with quick change gear; one 25-in. back geared vertical drilling machine, one 36-in. back geared vertical drilling machine, one 20-in. back geared heavy duty crank shaper, one No. 5 tool grinding machine, one sensitive drill, with 13-in. swing; one jointer and buzz planer.

The Spanish-American Iron Company, 71 Broadway, New York, has inquiries out for machinery equipment aggregating a large sum, which is intended for an iron plant to be built at Mayoni Incline, on the north coast of Cuba. It is understood that the plant will be of large proportions. It is intended to mine and smelt the ore there and ship it to this country in pig iron form. Charles F. Rand, who will be in charge of the buying, is now in Cuba and will return about August 7. The company is controlled by the Pennsylvania Steel Company and has for some time been engaged in shipping ore to Sparrow's Point, Md., and Steelton, Pa.

About \$22,000 will be spent by the Mexican Central Railroad, whose main offices are at 25 Broad street, New York, for shops at Guadalajara, Mexico, where the company has its main repair and construction shops. It is proposed to erect, in addition to a roundhouse, a building 60 x 150 ft. for general machine shop purposes. It is understood that there are to be some other smaller extensions, which will be decided upon later. J. J. Maguire, who is located at 25 Broad street, is the purchasing agent.

While the Central of Georgia Railroad has not completed plans for its new shops to be built at Macon, Ga., the company has recently purchased considerable equipment for its proposed new power plant. Last week reference was made in these columns to the purchase of a large air compressor, and now it is reported that the company has placed an order with the Westinghouse Electric & Mfg. Company for power equipment for its new plant, including steam turbines, generators, motors, converters, transmitters, &c. It is understood that the shops are to be electrically operated throughout. As the purchase of power equipment is usually followed with inquiries for machine tools, it will not be surprising if the company sends out a list of its machinery requirements within a short time.

The Mergenthaler Linotype Company, 154 Nassau street, New York, will probably come into the market shortly for a good sized lot of machine tools to equip an addition to its plant on Ryerson street, Brooklyn. It will be remembered that some time ago the company purchased considerable equipment in the New York market for an addition to its plant. Since that time more property has been purchased and the company now proposes to erect an eight-story concrete and steel structure, 165 x 174 ft. The contract for the erection of the building has been awarded to the Concrete Steel, Tile & Construction Company, 1 Madison avenue, New York. It is understood that none of the machinery equipment for the proposed addition has been arranged for as yet. The buying will be done from the company's plant at 24 Ryerson street, Brooklyn.

Westinghouse, Church, Kerr & Co., 10 Bridge street, New York, will shortly purchase a large amount of machinery equipment for the Ajax Portland Cement Company, for a plant near Independence, Kan. The company expects to operate a plant to turn out about 3000 barrels of cement a day. The Leeds Construction Company, Kansas City, Mo., is the general contractor for the plant, and Westinghouse, Church, Kerr & Co. are the engineers. Inquiries now in the market cover machinery requirements to develop about 4500 hp. It is understood that Mr. Leeds is in New York at present and is making his headquarters with Westinghouse, Church, Kerr & Co., with a view to looking into the question of the machinery equipment.

Considerable new equipment will be required by the Rochester Composite Brick Company, Rochester, N. Y., to replace that lost in the fire which recently destroyed its plant. It is the intention to rebuild as rapidly as possible, and while the company has not yet ascertained just what it will require in the way of new machinery, it will have to purchase among other equipment a quantity of elevating and conveying machinery, shafting, pulleys, &c.

As the mechanical equipment has not yet been purchased, the plans of the Missouri Warehouse Company, Kansas City, Mo., to construct a large plant, will be of some interest to the machinery trade. The company has not yet prepared specifications for the equipment it will require, but as the plans contemplate some large structures to be operated electrically, considerable in the way of power plant equipment will be required. The plant will cost about \$2,000,000 and will consist of a main building, 360 x 485 ft., six stories high, and divided into 120 sections or independent warehouses, each 38 x 160 ft.; cold storage building, 160 x 190 ft., six stories; manufacturing building, 117 x 189 ft., six stories, to be occupied for light manufacturing and for which the company will furnish light and power; power house, 125 x 150 ft., to supply power for ice and refrigerating plant, manufacturing building, elevators,

&c. John P. Wagner is president and consulting engineer, and James H. Harkless, secretary and treasurer.

The Clark Thread Works, Kearney, N. J., is buying a power plant of about 2500 hp. The purchases so far have included Stirling boilers, Green fuel economizers and a Green forced draft system. Mr. Abercrombie of the Clark Company is in charge of the machinery details.

Orders are being placed by the Celluloid Company, 295 Ferry street, Newark, N. J., for machinery to develop about 3000 hp. The company has bought Allis-Chalmers turbo generators, Babcock & Wilcox boilers, Green fuel economizers and Alphonse Custodis stacks. Later on the company will, it is understood, buy for another power addition of about 3000 hp.

Bids will be received on Wednesday, August 7, at the Fire Department, New York, for installing two motor generating sets and switchboards for the fire alarm telegraph system. The time allowed for the completion of the contract is 60 days.

Bids will be received on August 6 by the president of the Borough of the Bronx, New York, for furnishing two double cylinder road rollers, with horizontal boilers to match.

Chicago Machinery Market.

CHICAGO, ILL., July 30, 1907.

The machinery market seems to have drifted into a condition of midsummer quiet, that presents a striking contrast with the active business during the early months of the year. The large orders for new equipment for plant extensions are conspicuously absent. There are, on the other hand, quite a number of small orders filtering in from various sources, which go far toward holding the market on even keel. In machine tools these in many cases represent the needs of miscellaneous buyers, who were averse to placing orders for extended delivery, preferring to buy from time to time as the tools they needed became available. It is reasoned that, from the number of inquiries heretofore withdrawn because of inability to secure reasonable deliveries, there must be a good demand awaiting the time when requirements can be supplied out of hand. Inasmuch as the constant additions now being made to dealers' stocks indicate that this time is not far distant, it is expected that many of these inquiries will before long reappear. In some special lines of tools a more active demand has been noted within the past week or 10 days. This is especially true of railroad boiler shop equipment, including punches, shears and flue cleaning machines. Among such orders placed was one by the Grand Trunk, which also included a few machine tools for its shops. No purchases have been made of tools comprising the Lyman Trumbull High School list, recently published in these columns, and inasmuch as the building will not be completed for some months, it is not likely there will be any haste in placing orders. But since the requirements represent the definite needs of a public institution, there is not the uncertainty of ultimate purchase that has attended some large lists of industrial plants heretofore submitted and subsequently withdrawn. Judging from the run of inquiries and orders in the market for hydraulic punches and presses, the makers of this class of machinery are enjoying a full share of the business moving. The constantly increasing use of pressed steel shapes is in part responsible for this demand. Viewed as a whole, the trade in all machinery lines is quite uneventful, and pending a turn in the general trend of affairs there is no reason to expect more than a fairly well sustained demand until later in the season.

The Joliet Iron Products Company, Joliet, Ill., has actively begun construction work on its new bar iron mill, and foundations are about completed. This plant, of which D. H. Lentz is the superintendent, will have a 22-in. bar and muck mill and a 12-in. guide and bar mill, with provision for an additional 18-in. mill to be installed later. The ground dimensions of the mill are 90 x 270 ft. The product will be high grade refined iron. Most of the mill machinery has already been purchased, but the company is now seeking to buy equipment for a small lighting plant, which will consist of a direct connected direct current generator set of 150 to 250 kw. capacity; also 220-volt direct connected motors. Propositions for a good second-hand outfit meeting these requirements would be considered.

The Industrial Iron Works Company, Clinton, Mo., has been incorporated with a capital stock of \$25,000, all paid in. The principal line of manufacture contemplated by the new company is gas and gasoline engines, and its shop will be equipped with tools suitable for this work. The company is now in the market for this equipment.

The Consolidated Press & Tool Company, Hastings, Mich., maker of presses, dies and sheet metal tools, has practically doubled its output through the addition of a large number of new tools, including lathes, planers and drills.

Most of the large tools are equipped with independent motor drive. In order to increase facilities for serving the large tools and for erecting, the shop has been equipped with a main traveling crane, in addition to which two auxiliary cranes are used for lighter work, and also a 10-ton swinging crane for loading and unloading cars. Besides several large contracts now in hand for delivery in 1908, the company reports a very satisfactory export business, a feature that prior to the completion of the new shop had not especially engaged its attention.

The Kempsmith Mfg. Company, Milwaukee, Wis., manufacturer of milling machines, states that during its fiscal year, ending June 30, a net increase of 60 per cent. was shown over the business of the previous year. The company has a large amount of orders booked for forward delivery, and in order to hasten shipments has installed a number of new machines. This increase in tool equipment has necessitated extensive additions to the power plant, and a larger boiler is now being installed. Besides orders from railroads and other sources for Kempsmith millers, one for three No. 3 motor driven machines was recently received from the Government. The company states that the demand for motor driven tools is rapidly increasing.

The Ransom Mfg. Company, Oshkosh, Wis., maker of grinding and polishing machinery, besides improvements which include the addition of one 16-in. and one 24-in. engine lathe to its plant equipment, is building a new brick office building. The company reports that although business has quieted down considerably within the last 60 days, the demand at the present time is normally satisfactory.

Baker Brothers, Toledo, Ohio, makers of iron and wood working machinery, have just completed and now occupy a new pattern shop building, 30 x 100 ft., of modern brick and concrete fireproof construction. This improvement greatly facilitates the handling of its growing business in machine tools and foundry work.

Among the recent shipments made by the Walcott & Wood Machine Tool Company, Jackson, Mich., was an important consignment of machinery to the Isthmian Canal for machine shop equipment. The company reports that the orders now on its books are sufficient to run the factory to its maximum capacity to the remainder of the year.

In the July business thus far received by Mitts & Merrill, makers of castings and machinery, Saginaw, Mich., were orders for seven machines for export. The firm has added to its shop equipment a 3-in. Jones & Lamson turret lathe and a 36-in. Gould & Eberhardt automatic gear cutter.

There is a possibility that no further steps may be taken by the city of Milwaukee in the establishment of a municipal lighting system, reference to which was recently made in these columns, notwithstanding the fact that a general election resulted in favor of such a plan and that the Common Council has authorized a preliminary bond issue for the purpose. There is developing a general sentiment on the part of Milwaukee business men that, in view of the need of other improvements and the fact that the Wisconsin Legislature has recently enacted a law providing for the control of public utility companies, the project of establishing a municipal lighting system should be abandoned, for the time being at least. Most of the leading business organizations of Milwaukee have passed strong resolutions urging the Common Council to discontinue all work on a municipal plant.

Cleveland Machinery Market.

CLEVELAND, OHIO, July 30, 1907.

The machine tool trade continues very good for this season of the year. In fact local dealers report that their July sales will exceed those of May or June. Business has kept up in very satisfactory shape during the past week, and even if another summer lull comes, dealers do not expect it to be of long duration, now that the summer is so well advanced. While the demand is mostly for single tools for additional shop equipment, a few good sized orders have been placed during the week. A large majority of the purchasers of single tools want immediate delivery, and the dealer who has a tool on the floor where his prospective customer can see it has much better chance to make a sale than the one who can only make promise of shipment in a few days. As a result of the good business during the past few days the stocks of the local dealers, which had become pretty well replenished, are again low, sales of tools out of stock for immediate delivery being made faster than tools are being received from the factories on old orders. The heaviest demand at present is for lathes and shapers. While most of the purchasers want their tools at once, there is a fair demand for machine tools for October delivery. There are still quite a few inquiries in the market, and dealers are looking for a fair amount of business during the early part of August. While some machinery manufacturers are as well loaded up with orders as a few months ago, others

note a considerable easing up in the situation and are soliciting business. The general feeling, however, is that business will continue good in practically all lines for some time to come.

Plans and specifications have been completed for a new technical high school for Cleveland, and the Board of Education will receive bids for the new structure August 5. It is the intention to have one of the most complete and up to date technical high schools in the country. The building will cost about \$300,000, exclusive of equipment, and will have accommodations for 1200 pupils. A four years' course will be provided. It is planned to have the new school ready for occupancy at the opening of the school year in the fall of 1908. A large amount of space will be provided for shop work in the school, and the equipment will be along the line of that found in similar institutions. Definite plans for the tool equipment have not yet been formulated.

The Cyclone Woven Wire Fence Company will soon begin the erection of a two-story cement building, 65 x 100 ft., which will double the capacity of its local plant, which was erected only about a year ago.

The Fremont Power & Light Company, Fremont, Ohio, has decided to build an \$80,000 power house at Ballville, near Fremont. The Sandusky River will be dammed and water power secured to operate the plant. The company plans to have a plant with a maximum capacity of 2000 hp.

The American Shipbuilding Company has just completed extensive alterations to its Lorain plant. The entire plant has been equipped with electricity, and a new 600-ft. dry dock has been completed. The company built a large machine shop at its Cleveland plant last season, and with the improvements to the Lorain plant, regards its plants in very satisfactory shape at present, and plans no further additions during this season except the usual addition of machine tools from time to time. The company has just placed an order for a 42-in. planer, a 24-in. lathe and a 20-in. lathe for October delivery for installation in its repair shops in Lorain. Orders for steel lake boats for the spring of 1908 delivery have come in in very satisfactory shape, and with about a dozen boats already under contract the shipbuilding company is assured of enough work to keep it busy until next spring.

The Cleveland Drop Forging Company has completed its new plant on Berea road, adjoining the plant of the Ohio Ceramic Engineering Company, and will begin operations in a few days. The plant is equipped with three drop hammers and will turn out a general line of forgings. The plant is located on the Lake Shore Railroad, and the company has acquired a large site, so that it will have plenty of room for expansion as the business grows. A. W. Stone is president.

The National Screw & Tack Company is making extensive changes in its machine shop equipment, many of the old tools being taken out and replaced by new and more modern ones.

The J. D. Smith Foundry Supply Company has moved its offices from Columbus road to the offices formerly used by the Variety Iron Works, on Scranton road. The company recently purchased the old Variety plant in order to increase its capacity.

The International Saw & Tool Company, Columbus, Ohio, which was incorporated some time ago with a capital stock of \$50,000, has fitted up a plant at 101 South Scioto street and commenced the manufacture of circular and patent inserted tooth saws. The officers are: Andrew Krieger, president; Philip Schlapp, vice-president; A. M. Harris, secretary and treasurer.

New England Machinery Market.

WORCESTER, MASS., July 30, 1907.

The effort is being made in machinery circles to induce the manufacturers of power machines for sheet metal working to adopt the practice of exclusive agents among the machine tool dealers and the usual system of resale prices. The tools in question include presses and what is commonly known as sheet metal working machinery. A few such manufacturers have already seen the advantage of exclusive agents and fixed, unbreakable prices. But the majority of them, according to the complaints of the regular dealers, deal indiscriminately with brokers, jobbers and agents who carry no stock of machinery, and having relatively no selling expenses, sometimes quote users within 2½ or 5 per cent. of manufacturers' prices. The argument which has been made to the manufacturers in question is that nearly all of the leading builders of machine tools for working iron, steel and brass have greatly profited by recognizing machinery dealers as their medium of distribution, fixing the price at which they shall sell to the user and protecting the dealer in the territory assigned to him. On nearly all important lines all inquiries addressed to the manufacturer are referred to the dealer in the territory in which they originated, or if quotations are made they conform to the established selling price. Under existing conditions presses and other sheet metal cutting tools are carried in stock by dealers to a very limited

extent, and as a rule not at all by wholesale hardware jobbers. It is maintained by the dealers that if the exclusive agency and resale prices were established there would be greater effort to sell the machines in question, with corresponding greater benefit to the manufacturer as well as to themselves.

Signs multiply to show that those buyers of machine tools who have been holding back in placing orders no longer regard the situation as one of doubt and are preparing to enter the market for their requirements. Some time ago a customer who had placed an order for three good sized planers notified the manufacturer to cancel one of the machines, and intimated that probably it would be decided to cancel one of the others. The second notice was not sent out, however, and now word has been received to go on with the third machine, revoking the cancellation. This is rather an extreme case, for there have been practically no cancellations. But the same motive which actuated the customer in question to cut down his order has impelled others to go slower than had been planned in increasing manufacturing capacity. To-day, however, this hesitancy appears to be disappearing rapidly. Agents are notifying the machine tool builders that while present orders are individually small, though totalling materially good figures, there are signs of larger business in the early fall. The dealers everywhere, according to their reports to the manufacturers, express a strong confidence in the autumn trade.

There continues to be an ample supply of second-hand machinery, though the types which are hardest to obtain in new tools are almost correspondingly scarce in the second-hand market. Prices for second-hand tools do not run so high as they did, but they are by no means low.

The Dean Steel Die Company, New Britain, Conn., has been organized, with an authorized capital stock of \$50,000, and will manufacture all descriptions of dies, including embossing, cutting, punching, stamping, bending and drawing dies. The incorporators are John Renfrew Dean, who has been connected with the Corbin Cabinet Lock Company as a designer; George W. Corbin, president of the Union Mfg. Company and formerly president of the Corbin Cabinet Lock Company, and Charles Glover of the American Hardware Corporation. The company will begin business with \$15,000 capital. The factory, which will be located in New Britain, will be filled with machinery of the latest type. Outside of automatic machinery, the company states that it is impossible at this time to state just what its requirements will be. It is the expectation that by means of the complete equipment, and from the fact that the company will specialize on this one class of work, it will be able to fill all orders promptly.

The plant of the Carriage Wheel & Gear Company, Merrimac, Mass., is a total loss as a result of the recent fire. The loss is estimated at \$35,000, with insurance of \$19,500. The company states that it has not finally decided to rebuild, but that the prospect is favorable, and in case the decision is reached a full equipment of machinery for the manufacture of wheels will be required.

The project of establishing a large power plant at Clinton, Mass., utilizing the flow of water from the great Wachusett reservoir into the big aqueduct which supplies Boston and its metropolitan district with water, seems to have reached a point where some immediate action will be taken. The Lancaster Mills Corporation, Clinton, a large manufacturer of textiles, stands ready to take the power, it is officially stated, at a fair price. This company uses about 3500 hp., and it is hoped that that amount of power will be developed by the Metropolitan Water Board, which has control of the water system. It is presumed that an auxiliary steam plant will also be necessary, that the power may be dependable at all times.

The project of the Connecticut River Power Company to establish a large hydraulic power plant on the Connecticut River, between the towns of Hinsdale, N. H., and Vernon, Vt., is progressing. Companies have been organized both in New Hampshire and Vermont, and a mortgage of \$2,000,000 with the Old Colony Trust Company, Boston, as mortgagee, has been recorded in New Hampshire to secure an issue of bonds. A large dam will be constructed and a large power developed.

The New York, New Haven & Hartford Railroad makes the official announcement that it will next turn its attention to the electrification of the suburban service of Boston, probably following the same general system as that which has just gone into effect in New York. The company is making a strong effort to overcome the physical obstacles to this plan, notably in the rapid abolishing of grade crossings, which must be accomplished before the new motive power can be installed, especially because the overhead wiring is too expensive to be put up twice at any one point. The company also states that it must be sure mechanically of the success of the New York experiment.

The works of the Grout Automobile Company, Orange, Mass., which have been closed because of a receivership resulting from litigation between owners, resumed operations July 29. The business will be carried on as usual, Judge E. S. Hill and David I. Walsh directing its operation as receivers.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 30, 1907.

The month of July will in all probability be recorded as one of the duller than the machinery trade in this territory has experienced for some time. A large share of the falling off in the demand is attributed to the usual midsummer inactivity, while at the same time the decision of the prospective large buyers and the railroads to withhold purchases has also had its general effect on the market. The falling off in new business has been felt to the greatest extent by the machine tool merchants, the manufacturers in most cases having the full capacity of their plants taken on old orders. In a few instances even the builder has felt the lack of new business, and a few tools are being built for stock by some manufacturers in order to keep the full working force employed. The general feeling, however, is good, and it is believed that a resumption of buying will take place during the early fall months, and while it is scarcely anticipated that the same volume of business will come out as was the case last fall, it is expected that there will be sufficient business to keep plants well occupied. In some cases manufacturers have enough business already on their books to cover their capacities, generally speaking, during the remainder of the year, but if they are manufacturing a general line it is more than likely that orders for some classes of tools are not as large as others of the line.

During the past week dealers report somewhat more active conditions in the local territory. The out of town demand, however, was hardly as good as that of the previous week. Sales were not very extensive and were confined largely to single tools, mostly of the smaller sizes. There is very little demand for tools of the larger types, and the market is bare of specifications for any extensive equipment. Business of this class, however, does not come out very frequently during the summer months, owing largely to the vacation season.

There have been no new developments in this territory as far as foreign trade is concerned. Some business for export has been done, but it is largely confined to special tools. Manufacturers who have an established trade abroad report the demand fairly good for the time of the year.

Boiler and engine builders, while actively engaged on old orders, note a fair volume of business during the past month. Large propositions, however, have been rather hard to close and considerable work is now pending. Dealers in second-hand engines and boilers found a slight improvement in the demand last week, although on the whole the trade has been rather inactive. Sales have been confined recently to equipment of the medium and smaller horsepower.

Second-hand machine tools have not been in very active demand. The ability to obtain new tools for more prompt delivery (merchants now having a fairly good stock of new tools on their floors), has retarded the sale of second-hand equipment to a large extent, and the market is rapidly drifting into normal conditions, such as prevailed prior to the great rush for machine tools last year. Midsummer dullness is also being experienced in this branch of the trade, and such business as is being done is confined largely to tools of the smaller sizes.

The foundry trade continues quite active. In some classes of gray iron work business has not been as active as heretofore, and some of the foundries are understood to be hunting for business. Machine tool builders report their ability to obtain machinery castings much more promptly than heretofore. Steel casting plants continue very busy, there being no let-up in the demand for castings of this class. Another new crucible steel plant, the Keystone Steel Casting Company, Chester, Pa., became a producer last week. This concern will also make what are known as McHaffie steel castings.

The Baltimore & Ohio Railroad Company has in contemplation, it is understood, the purchasing of the plant of the Delaware Hard Fiber Company, Wilmington, Del., with the possibility of transforming it into a repair shop, as an adjunct to its repair plant at Mt. Airy, Md. The Delaware Hard Fiber Company has a new plant in course of construction at Marshallton, Del.

Ballenger & Perrot, engineers and architects, have completed plans and specifications for two additional buildings for the Victor Talking Machine Company, Camden, N. J. One building will be 92 x 174 ft., one story and basement, with provisions for five additional stories. The other, 80 x 173 ft., will be six stories in height. The column, floor and roof construction will be concrete. Sawtooth skylights will be provided in the roof. Freight and passenger elevators will be installed in each building.

The H. H. Sheip Mfg. Company, part of whose plant at Sixth street and Columbia avenue was recently destroyed by fire, has had plans prepared for a new three-story factory building, 96 x 119 ft., to be located on the same site. Bids

for the construction of the building are now being taken. It will be recalled, as mentioned in these columns recently, that a large quantity of woodworking machinery was destroyed at the time of the fire.

The Bement-Miles plant of the Niles-Bement-Pond Company has now in course of shipment the largest planer ever built. This tool was built for McIntosh, Hemphill & Co., Pittsburgh, Pa., and weighs, complete, over 840,000 lb. The length over all of this tool is 60 ft., and the housings stand 30 ft. in height. The table measures 14 x 35 ft. The machine is electrically driven, motors aggregating 100 hp. being used. This tool was recently tested at the builder's plant and proved satisfactory in every respect.

The Brylgon Steel Casting Company, New Castle, Del., has completed the installation of two new converters with the necessary machinery, as well as a 50-ft. addition to the foundry. These it now has in regular use, thereby greatly facilitating the output of steel castings. A pattern storage house, 30 x 80 ft., is now in course of erection, and a new pattern shop, 24 x 36 ft., will also be built. This latter, it is expected, will not be completed until some time in September.

Dienelt & Eisenhardt, Inc., continue very busy in every department, and have sufficient orders on hand to keep the plant fully occupied until the close of the year. The demand for hydraulic jacks keeps up fairly well. Orders for a large quantity of machinery for linoleum manufacture have also been booked, while several orders for Lovekin pipe expanding machines have been received. Several of these latter machines have also been shipped, one of which delivered to Boston, Mass., parties resulted in a duplicate order. This firm also reports a very satisfactory business in its line of Monarch electric motors for all classes of work. Deliveries are being made with a fair degree of promptness, and conditions are considered generally satisfactory.

The Baldwin Locomotive Works keeps actively engaged. The various departments of the plant are being operated at full capacity, and sufficient work is on hand to keep them fully engaged for months ahead. While it is hardly expected that any very large orders will be placed at this time, one for 50 locomotives for the Southern Railway Company was recently booked. A considerable amount of general repair work has also been taken. In this respect it is to be noted that the engines undergoing repairs will be dismantled at the Eddystone, Pa., plant of the company, the parts shipped to the local shop for the necessary work and reshipped to Eddystone for assembling. The Baldwin Works has just shipped the last three engines on the order of the Paris & Orleans Railway in France for 20 engines. These locomotives were of the De Gehen type, built entirely upon the metric system of measurements.

Cincinnati Machinery Market.

CINCINNATI, OHIO, July 30, 1907.

Conditions in the local machinery market are practically as they were a week since. Occasionally there is a spasmodic flurry that lasts for a day or two, and which has the effect to keep the situation at about normal when compared with the week preceding. As a rule, manufacturers are well satisfied and see nothing in the near future that causes them any uneasiness or alarm. There is one factor that is perhaps overlooked and which is destined to become of marked interest within the next year or two. This is the demand that is gradually increasing from hitherto undeveloped countries, from which in the past it was a surprise to have a call for more than two or three machines during the entire season. Foreign builders have been the pioneers in developing and nursing this branch of the trade, and have managed by some means or other to mislead their competitors as to the importance of the trade that they were then fostering. But a radical change has now taken place in this respect, and American tool builders are visiting in person these countries and have succeeded in securing a fair proportion of the tools required in the development of the plants now under construction. Dealers in second-hand machinery report a fairly active trade, particularly in special lines, thus showing that deliveries along general lines are somewhat easier than they were early in the spring.

Representatives of a large Chicago concern have been in the city during the week, with a view, it is said, of leasing or buying the steel foundry plant at Chester Park, that recently was placed in the hands of a receiver.

The Samuel C. Tatum Company, manufacturer of machinery, located at present at Water and John streets, has secured a permit to erect a \$32,000 plant on Colerain avenue, between Monmouth and Michigan streets; also a one-story foundry, to cost \$20,000. The main structure will be of brick and steel, five stories.

The R. K. LeBlond Machine Tool Company is actively

engaged in pushing ahead its new building and expects to be in possession within the following month. Quite a number of the most improved tools have been installed in the several new additions, and the capacity of the plant will be very largely increased.

Government Purchases.

WASHINGTON, D. C., July 30, 1907.

The Isthmian Canal Commission will soon ask bids for two upright boilers and appurtenances, two duplex pumps, &c.

Bids were opened as follows July 23 for supplies for the navy yards:

Bidder 4, Alliance Machine Company, Alliance, Ohio; 24, Brooklyn Forge & Supply Company, Brooklyn, N. Y.; 27, E. W. Bliss Company, Brooklyn, N. Y.; 32, Bethlehem Steel Company, South Bethlehem, Pa.; 52, Camden Iron Works, Camden, N. J.; 76, Erie Foundry Company, Erie, Pa.; 78, Fairbanks & Co., New Orleans, La.; 79, Fairbanks & Co., Baltimore, Md.; 80, Fairbanks & Co., Boston, Mass.; 102, Hawley Down Draught Furnace Company, Chicago, Ill.; 147, Lucas Machine Tool Company, Cleveland, Ohio; 161, Monarch Engineering & Mfg. Company, Baltimore, Md.; 164, Morgan Engineering Company, Alliance, Ohio; 171, Manning, Maxwell & Moore, New York; 178, Niles-Bement-Pond Company, New York; 183, New Jersey Foundry & Machine Company, New York; 204, Jos. T. Ryerson & Son, Chicago, Ill.; 206, H. B. Roelker, New York; 207, Rockwell Engineering Company, New York; 216, P. H. & F. M. Roots Company, New York; 218, H. A. Rogers Company, New York; 232, B. F. Sturtevant Company, Hyde Park, Mass.; 235, Wm. Sellers Company, Philadelphia, Pa.; 243, Toledo Machine & Tool Company, Toledo, Ohio; 270, Wm. H. Wood, Media, Pa.; 279, Excelsior Equipment Company, Pittsburgh, Pa.; 288, O. K. Olsen, New Orleans, La.

Class 11. One large geared trimming press—Bidder 27, \$5600; 243, \$3098; 279, \$6049.

Class 31. One horizontal boring, drilling and milling machine—Bidder 147, \$3980.

Class 32. One improved hydraulic accumulator—Bidder 4, \$4590; 24, \$5295; 32, \$4842; 52, \$2580; 171, \$3300; 183, \$6233; 218, \$5150; 270, \$2375.

Class 34. Two dense air ice machines and spare parts for same—Bidder 206, \$9100.

Class 35. One 2500-lb. single frame steam hammer—Bidder 4, \$2680; 76, \$2772; 78, \$2897; 164, \$2990; 171, \$2700; 178, \$2250; 204, 2837; 235, \$2650.

Class 36. One positive pressure blower—Bidder 216, \$1842 and \$1650; 232, \$700 and \$745; 288, \$198 and \$125.

Class 37. One Schwartz or Rockwell melting furnace—Bidder 102, \$800; 161, \$425; 207, \$985; 288, \$880 and \$550.

Class 161. One motor drive outfit for traveling head shaper—Bidder 171, \$595; 178, \$530.

The following bids were opened July 20 for two 20-ton electric traveling cranes for the Puget Sound Navy Yard:

Item 1, price for two cranes; 2, price for one crane; 3, price for one crane except auxiliary hoist; 4, price for one crane with provision for auxiliary hoist; 5, price for two cranes on bidders' specifications:

Modern Steel Structural Company, Waukesha, Wis., item 2, \$6425; 3, \$5900; 4, \$5900; 5, \$12,000.

Ransom Concrete Machinery Company, Dunellen, N. J., item 1, \$9226; 2, \$4788; 3, \$4196; 4, \$4216.

Cleveland Crane & Car Company, Wyckliffe, Ohio, item 1, \$13,395; 2, \$6895; 3, \$6000; 4, \$6000.

The following bids were opened July 22, Circular No. 375, at the office of the Isthmian Canal Commission:

Bidder 14, Excelsior Equipment Company, Pittsburgh, Pa.; 16, Fox Bros. & Co., New York; 27, Manning, Maxwell & Moore, New York; 33, Niles-Bement-Pond Company, New York; 39, Prentiss Tool & Supply Company, New York.

Class 15. One helve hammer—Bidder 14, \$874, 60 days; 16, \$549, 35 days; 27, \$833.75, 90 days; 33, \$597, 75 days; 39, \$406, 30 days.

Under bids opened July 9 for supplies for the navy yards the E. W. Bliss Company, Brooklyn, N. Y., has been awarded class 113, two turbine bucket cutting machines, \$2900.

The Detrick & Harvey Machine Company, Baltimore, Md., has been awarded class 62, one motor drive outfit, \$325, under opening of July 16 for supplies for the navy yards.

Under opening of June 25 for supplies for the navy yards the Pacific Tool & Supply Company, San Francisco, Cal., has been awarded class 11, one shaper, \$575; class 12, one upright drill, \$325.

Class 18, three dynamos and engines, bids for which were opened June 27, Circular No. 371, at the office of the Isthmian Canal Commission, has been awarded to the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., at \$1555.

Under opening of May 17, Circular No. 363, for supplies for the Isthmian Canal Commission, Manning, Maxwell & Moore, New York, have been awarded class 2, one boring and turning mill, \$8263.

New Publications.

National Iron and Steel, Coal and Coke Blue Book.

Third edition, 6 x 9 in. Pages, 974. Published by R. L. Polk & Co., Pittsburgh, Pa. Price, \$10.

The present volume, like its two predecessors, is a directory of the individuals, firms and corporations engaged in the manufacture of iron and steel and in the mining of coal and the production of coke. The early pages are devoted to an index of iron and steel products, with page references to the manufacturers. This is followed by a general grouping of the iron and steel manufacturers under the heads of Bessemer Steel Works, Crucible Steel Works, Open Hearth Steel Works, Steel Foundries, Blast Furnaces, Forges and Bloomeries, Merchant Mills, Plate Mills, Rail Mills, Sheet Mills, Skelp Mills, Tin and Terne Plate Works, Structural Mills, Malleable Casting Works. A similar grouping is given also for Canada and Mexico. The real directory of the iron and steel works of the United States, Canada and Mexico follows, the names of all firms in whatever line of manufacture being given in alphabetical order, with particulars of each organization and its products. Sixty-five pages are then devoted to an alphabetical list of proprietors, directors, officers, managers, sales agents and superintendents of iron and steel works. A grouping by States of blast furnaces and iron and steel works follows.

Beginning at page 401 the second grand division of the work is given up to the Coal and Coke Blue Book. Producers of anthracite coal are first given in an alphabetical list, followed by the producers of bituminous coal similarly arranged, officers of the various coal companies being given and the location of the mines operated. There is also a similar list for Canada. The main portion of the Coal and Coke Blue Book is devoted to a directory of coal and coke producers arranged by States. The data include the location of the mine, the method of mining, the tonnage and the address of the operating corporation or firm. The entire work gives evidence of painstaking care in the collection of the information, which is brought down in most cases to May, 1907. The fact that even since the compilers closed their lists new firms have appeared in the iron and steel world while old names have been changed indicates in what a state of flux the industry is. Some additions might be made to the list of steel castings manufacturers, particularly among the users of the small Bessemer converter. A number of improvements on the previous editions appear, making the book the most valuable the publishers have brought out.

Reports from Marquette, Mich., state that Charles Schaffer and others have organized a company to build a blast furnace at East Jordan on Pine Lake. It is announced that associated with Mr. Schaffer in the enterprise are F. B. Baird of Buffalo; W. S. Shaw and W. H. Mathews of Boyne City, who were also interested in the Boyne City stack, recently sold to the Lake Superior Iron & Chemical Company; and W. J. Ellison and Fred Smith of Boyne City, formerly of Marquette. The company, it is stated, will have a capitalization of \$500,000, and will build a dock in connection with the stack, having secured a site on the water front.

The American Rolling Mill Corporation, Chicago, has been placed in the hands of the American Trust & Savings Bank, acting as receiver in bankruptcy. The corporation operates an iron and steel bar mill at Muncie, Ind., and has in course of construction a new bar mill, located on the South Branch of the Chicago River, at Robey street, Chicago. It is understood that upon completion of this mill it was the purpose of the corporation to dismantle the Muncie mill and move its machinery equipment to Chicago for installation in the new plant. Pending an examination of the corporation's affairs it cannot be said what disposition will be made of the business. It is stated, however, that a resumption of operations under the present organization is extremely doubtful.

Important Questions Before the Molders' Convention.

The financial report presented at the twenty-third convention of the Iron Molders' Union of North America, now in session at Philadelphia, showed that the total receipts from all sources between September 1, 1902, following the Toronto convention, and June 20, 1907, were \$2,366,213. In this amount the principal items are \$1,324,179 from monthly tax, \$248,506 defense fund receipts, \$408,148 special assessments, and \$243,681 received from trustees. In the disbursements the principal items are the following: Official expenses \$390,522, death and disability benefits \$279,154, strike benefits \$1,477,007, to trustees \$200,452.

A Temperate Document.

The report of President Joseph F. Valentine, from which the paragraph relating to agreements was printed in these columns last week, is a generally temperate document. In fact, its expressions on questions sharply at issue between the Iron Molders' Union and the National Founders' Association are more moderate than would be expected from what was urged from time to time by the union officials in the days of their conference relations with the foundrymen. Mr. Valentine says, for example:

Let our future policy, as it will be outlined by this convention, carry with it the evidence of an intelligent conception of the rapid development taking place in the foundry industry and the problems this development has evolved. If our legislation is to bring those favorable conditions for which we labor, and place these upon a permanent foundation, we must give evidence of our regard for the rights of others, for we cannot expect that respect for our rights which we desire if we fail to give due consideration to the interests of those with whom we come in contact.

He speaks very plainly of the necessity for discipline in the ranks of the union and the obligations resting upon the membership to maintain their agreements with foundrymen.

The Pacific Coast Settlement.

Referring to the movement among molders on the Pacific Coast for an 8-hr. day, the report tells of the understanding finally reached by which the members of the Allied Metal Trades agreed to continue to work under the 9-hr. schedule for 18 months and thereafter reduce the workday 15 min. every six months until an 8-hr. day should be established in 1910. The president favored a shorter workday, but in view of the fact that the Iron Molders' Union is "a conservative and practical organization," recommends that the union continue to devote its energies to the establishment of the 9-hr. day where it does not yet prevail and to the raising of the standard of wages of members in underpaid districts.

Limitation of Output.

How the published statements of labor leaders and the actual practice of local unions often disagree is illustrated in Mr. Valentine's comments on limitation of output. He says: "I can say with truth that the Iron Molders' Union will neither justify nor defend an arbitrary and unfair limitation upon the output of its members. No fair-minded unionist will deny an employer's right to a fair and just return for the capital invested in labor and machinery. I will go further and say that the great bulk of the trade unionists are best satisfied when they feel that they have given their employers a good return for wages received." Then comes in the "but," and that is that some employers are unable to distinguish between the endurance of a machine and the endurance of flesh and blood, and therefore the trade union must defend its members against premature break down and protect their health and life against heartlessness and greed. It is this policy, Mr. Valentine says, that is held up for condemnation as limitation of output.

The Apprentice Ratio and the Molding Machine.

The most important recommendations of the report are those relating to the apprentice ratio and the molding machine. The president recommends that the ratio of one apprentice to every five journeyman molders be made of general application. This ratio has already been con-

ceded by the molders' union in stove foundries, replacing the old ratio of one to eight. Regarding molding machines, the president urges that the union adopt no policy that might be construed into hostility to the machine. "The day has gone by, if, indeed, it ever existed, when the Iron Molders' Union opposed the machine because it is a machine." Quite at variance with the usual policy of the Iron Molders' Union, which is to oppose piece work—though there are well-known exceptions—Mr. Valentine recommends that the work made on molding machines be put on a piece price basis. "In this manner all the phases of the machine could be given credit at their full value when a price is under discussion." It is granted that this recommendation might not be applicable to all forms of work made on the machine.

The Stove Conference.

Referring to the relations of the union and the Stove Founders' National Defense Association, the report says that these continue to be cordial. The convention is asked to ratify the decision that the conference meetings between the union and the S. F. N. D. A. be held hereafter in December instead of March. The union officers accept the manufacturers' reasons for the change, the principal one being that now that the gas stove is so prominent a factor there are two trade seasons, the earlier one being devoted to gas stoves and the later one to coal and wood stoves. Salesmen now go out in January to cover a considerable portion of their fall trade, and it is therefore desirable that the wage rate be fixed prior to January 1.

The National Founders' Association Discussed.

The relations of the union and the National Founders' Association, or rather lack of relations, receive considerable space in the report. Concerning the New York agreement between the two organizations the president says: "It led the foundrymen and molders to give greater thought to their respective rights and privileges. Until the history of the past five years shall be written we will be unable to adequately understand the full responsibility resting upon those who by their action abrogated and cast aside an instrument that had served to educate foundrymen and molders upon their just relations with each other."

The membership is reminded that that trade union succeeds best which most readily adapts itself to new conditions. "Specialization and the machine have revolutionized many handicrafts, and are to-day exercising a powerful influence upon the molder's trade. In this era, when a crusade is being preached by powerful influences against trade unionism, when the open shop is being defended ostensibly as a relief from trade union tyranny and opposition to new methods, but really with a less unselfish purpose, it will be the part of wisdom to temper our legislation with judicial calm and to frame our policy in a way that will disarm our enemies and discredit them in the eyes of an unprejudiced public opinion."

The sessions of the twenty-third convention of the Iron Molders' Union of North America were continued in Philadelphia throughout the week. Daily meetings have been held every afternoon and evening, and from present indications it is likely that they may be continued next week. All the business transacted has been of a legislative nature, and many of the delegates have presented plans for the betterment of the union. Fixing the permitted ratio of apprentices to journeymen molders has had considerable attention, as has also a proposition to increase the annual dues. The question of moving the national headquarters has been presented by a number of delegates. All these various motions are referred to a Committee on Resolutions, which has as yet made no report regarding them.

The foundation stone of the Carnegie Palace of Peace was laid July 30 at The Hague, Holland. It will be built with the \$1,500,000 donated by Andrew Carnegie for the purpose, will bear his name and will be the permanent headquarters of the Peace Conference and associated bodies.

Trade Publications.

Foundry Supplies.—J. D. Smith Foundry Supply Company, Cleveland, Ohio. Catalogue No. 37. Size 6 x 9 in.; pages 260. Covers the company's complete line of goods manufactured and handled and also calls attention to its engineering department, which undertakes the designing and building of iron, steel and brass foundries. The products manufactured are foundry facings, supplies and equipment, including wood mallets, sprues, bench hammers, handles, bellows, small tools, core boxes, snap flasks, cupolas, ladles, tumbling barrels, cranes, cars, turntables, trucks, &c. Machinery, tools and other supplies pertaining to foundries not manufactured but sold by the company are also shown. Prices are given of all the articles listed, and some 18 pages of useful information are appended. An alphabetical table of contents is given so that any part of the book may be quickly consulted.

Lathes.—Jones & Lamson Machine Company, Springfield, Vt. Leather bound catalogue. Size 6¼ x 9¼ in.; pages 151. Gives a very complete illustrated description of the Hartness flat turret lathe, followed by extracts from a previous publication, "Evolution of the Machine Shop." It is the company's sole product and is now made in two sizes for both bar and chucking work. The descriptive matter consists of a brief outline of the lathe, with cross sliding headstock, and its working range for bar work. Details are then described, including the turret, head, automatic bar chuck, roller feed, &c. The use of the lathe for chucking work is discussed at some length, and numerous illustrations show various operations and examples of work and how accomplished. Drawings show the machines as driven by electric motors and from countershafts, and directions are given for setting up and operating. Much instructive information is included calculated to help the operator to use the machines to best advantage. Besides the other engravings a frontispiece in colors shows the machine in operation, and a thumb index affords quick reference to any part of the book.

Diamond Core Drills.—Sullivan Machinery Company, Chicago, Ill. Catalogue No. 55. Size 6 x 9 in.; pages 157. The principal objects of this catalogue are to give a proper idea of the theoretical and practical advantages of prospecting mineral lands with the diamond core drill, and to gather under one cover all the information necessary to the selection of a suitable drilling outfit, its purchase, use and maintenance. The line of Sullivan diamond core drills is illustrated and described, including hand power, underground, deep and electric diamond prospecting drills, and various classes of diamond drills suitable for many purposes. Other products listed are rock drills and hoisting engines, air compressors, coal mining machines and quarrying machinery. Useful information and sizes, specifications and prices of drills, tools and supplies are given.

Storage Batteries.—Westinghouse Machine Company, East Pittsburgh, Pa. Catalogue S. Devoted to the Westinghouse storage batteries for stationary use. Sizes, capacities and prices are given in tabular form.

Pneumatic Tools.—Cleveland Pneumatic Tool Company, Cleveland, Ohio. Catalogue G. The subject matter covers Cleveland, Ajax and Jumbo inside and outside latch riveting hammers; Cleveland calking and beading hammers, stone and scaling hammers; Cleveland four-cylinder drills in reversible and nonreversible patterns; long and short angle gears for use in connection with the drill; hose clamping tools; hose connections; the Cleveland oscillating valve grinder (described in *The Iron Age* July 18, 1907); the Cleveland rotary breast drill; pneumatic holder-on, and the Cunnell pneumatic rivet forge. In connection with the various tools tables of capacities and dimensions are given, with directions for using and caring for the tools, and other useful information.

Punches and Dies.—I. P. Richards, Providence, R. I. Circular. Refers to U. S. standard punches, both plain and shearing cut types, for iron and steel, which the manufacturer makes in all sizes from ¼ to 4 in. in diameter. Illustrations are shown of specimen punches and dies.

Lever Shears.—United Engineering & Foundry Company, Pittsburgh, Pa. Pamphlet. Gives a list of some of the users of the company's lever shears and vertical shears, and also a few copies of testimonial letters.

Castings Repairs.—Reinforced Brazing & Machine Company, 1109 Arrott Building, Pittsburgh, Pa. Pamphlet. Refers to the Richardson method of reinforcing and brazing broken castings, the important feature of which is the introducing of steel reinforcement across the breaks so as to effect a permanent repair. Examples of castings so repaired are illustrated, the advantages are pointed out, and a number of testimonial letters are appended.

Steam Specialties.—Kitts Mfg. Company, Oswego, N. Y. Catalogue No. 3. Covers the following steam specialties: Steam traps; reducing valves; safety water columns; low water alarms; boiler feeders; pump governors; fan engine, damper and safety feed water regulators, and flue cleaners. Prices are given and in most cases brief descriptions of the principles of operation. A separate pamphlet deals solely with the Kitts standard steam trap, explaining its construction and operation, and another similarly deals with the Kitts fan engine regulator.

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HARDWARE

THE natural impulse of every trade organization is to protect itself and do what it can in opposition to measures and tendencies which militate against the interests of its members. An illustration of this is found in the efforts by the American Bankers' Association, as referred to in the letter of our Washington correspondent in our last issue, which is endeavoring to prevent express companies from engaging in banking business, especially the dealing in exchange, letters of credit, selling travelers' checks, &c., a business which is carried on to a considerable extent by large express companies. This matter is now before the Interstate Commerce Commission, and its decision after the express companies have been heard will be awaited with interest. It remains to be seen whether the position will be taken that such extension of the business of transportation companies is illegal, and within the class of trade evils the correction of which is in the power of the commission. Of this there appears to be some question. While it is doubtless proper that corporations should work under and within the provisions of their charters a reasonable and even liberal interpretation is given to such charters, which are indeed generally made sufficiently broad, and it is moreover contrary to the spirit of the law unnecessarily to restrict enterprise. While the express companies are often complained of on account of inefficient and high-priced service, it must be remembered that there is a tendency nowadays to break down the former lines which separated the various branches of trade, and there is a certain justification for new sources of supply and new methods of distribution which yield profit to those adopting them and at the same time give the public better service.

It is the business of bankers to deal in money and to secure its transmission from place to place. The express companies may regard money, as they unquestionably have a right to do, as a commodity, the delivery of which at another point falls strictly within their province. While in this view the carrying of merchandise or money, goods or gold, may seem alike to belong to the transportation companies and in many ways fits in well with their other business, such companies should not lose sight of the fact that their great and overmastering responsibility is the carrying of merchandise. Their endeavor first and last should be to do this in the most efficient and most economical way. A great deal of the strength and plausibility of the agitation in favor of parcels post is based on complaints of express service, and especially the high charges which are often made for the carrying of goods. A parcels post utilizing the machinery of the Post Office Department is demanded by many because the express companies fail to give service reasonable in its efficiency and expense. Those who advocate the Government's taking up this work are undoubtedly favoring a mistaken and mischievous policy, one which would entail great outlay of public money to get anything like the service which is expected. The whole project, indeed, on the lines suggested by its advocates or on the lines followed in Great Britain and other European countries, is in this country of great distances absolutely impracticable and visionary. At the same time there is a very insistent call for better and cheaper service in the transmission of merchandise of moderate volume, and it is up

to the express companies to see to it that they meet this popular demand as far as it is possible to do so, and not wait for the enactment of laws, perhaps in a more or less experimental way, establishing through the agency of the Government some method of satisfying this demand. If they fail to do this there may be legislation hostile to them, looking to the remedying of evils which they have permitted too long to remain uncorrected.

Condition of Trade.

At this time, when the vacation season is at its height, those who are in charge of things in factory or store find themselves fully occupied, the volume of current business being only moderately interrupted by the traditional midsummer quiet. Few manufacturers are able to accumulate anything like the oldtime stocks, and most of them have unexecuted orders on their books. They, however, are belabored less strenuously than has frequently been the case of late by complaints from merchants for shipments of goods too long delayed. Merchants are, on the other hand, in some cases deferring specifications, finding that their recent policy of liberal buying has given them well assorted stocks. In the retail field business, as is normal at this season, relaxes somewhat, in view of the increasing outdoor activities, especially in connection with harvesting. There is, however, the usual call for summer goods, in supplying which the sporting and athletic departments find themselves busy. The trade of the retail merchants is contributing in good measure to the manufacturers and jobbers from whom they purchase, as prosperous conditions generally prevail and increasing quantities of goods are passing through the stores into consumption, notwithstanding the competition of the catalogue houses and the tendency among large consumers, and some indeed not so large, to buy direct. Most retail merchants are able not only to report an excellent volume of business during the past six months, but also find that the closing half of the year opens under fair auspices and with good current business. The Hardware market as a rule shows few changes in price except as reductions are caused by decline in raw material, as in Copper and other metals, and to some extent in Iron. The larger buyers of Hardware and similar products are apparently counting on a fall season of good trade, but are not anticipating their requirements very far ahead. The financial stringency is undoubtedly having its effect upon commercial as well as industrial enterprise, but the conservative spirit which prevails is accompanied by cheerful expressions with reference to the continuance of good business and the opportunities for profitable trade during the coming months.

Chicago.

In following market movements it is difficult to reflect conditions in the measured shifts and countershifts of business that appear in the weekly periods. Trade transactions of the day or week, standing alone, are like the waves of the sea that, be they boisterous and choppy or smooth and quiet, give no indication of the tendency of the tide. Thus it is that in the averages of trade the general trend of affairs is more clearly seen. The results of the year have so far been highly satisfactory in Hardware lines, and the outlook for the remaining months furnishes no cause for apprehension. That the extraordinary pace at which things have been moving

has slowed up somewhat is not regarded as an unhealthy symptom. As a matter of fact, the extent of reduction in the volume of business thus far experienced is not great enough to furnish much relaxation for the vacation forces left to handle it. It is noticed that in some directions manufacturers are manifesting more activity in pressing sales, with the result that in certain lines the offering of slight concessions from established prices is reported. Bolt discounts have in some instances been slightly shaded to secure desirable orders. Generally, however, values show a good deal of firmness, and owing to the high level of prices at which forward material contracts were placed a few advances are still being announced. The action of some of the independent makers of Shovels and Spades in notifying the trade of a moderate advance was not unexpected, since it is claimed that these goods, especially in the cheaper grades, have afforded but a very meager margin of profit. Contracts for next season's requirements of Lawn Mowers are now being made, and here, too, it is understood that manufacturers are asking slight advances on cheap machines. Factory shipments are now coming forward with but little delay, save in some of the Wire products. Complaint is still heard of slowness of Barb Wire, the demand for which has been unusually persistent. Shortages in the common sizes of Wire Nails are yet of occasional occurrence, but on the whole the supply is better. An interesting meeting of the sales agents of the American Steel & Wire Company was held in Chicago July 23 to 25. Nearly all parts of the country were represented in the 225 men assembled for the purpose of general conference and interchange of views. The sessions of the convention were concluded with a banquet given by the company at the Auditorium Hotel, at which a number of addresses on pertinent trade topics were given. A consensus of opinion gathered from the views expressed as to the trade outlook for the year would indicate a pretty healthy condition of affairs throughout the country.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Conditions continue favorable in the Northwest. The weather throughout the whole month of July has been unusually favorable, and crops have come on very satisfactorily. We seldom see a more favorable month for crops than July has been. This condition has extended quite generally over the Northwest.

We are now approaching the most critical period, and the next few weeks will tell the story. Haying is in active progress and a good crop is being harvested. Oats will be light. Wheat still promises a fair crop. Flax looks unusually well.

Trade has been large throughout the month. The retail merchants are buying more freely. There is no hesitancy in buying for the wants of the fall on account of doubts as to prices holding.

The strike in the iron ore district is just now disturbing things considerably in that section, but it is not expected to last long. Collections are good.

Cleveland.

THE W. BINGHAM COMPANY.—In spite of the inclement weather that has prevailed all over our country in the past few weeks, which retarded the growth of the crops very much, now that we are having warm, seasonable weather and plenty of rain and sunshine, everything portends to fair crops all around. It is said "Prosperity is based on what comes out of the ground." As there seems to be plenty coming out of the ground there is no reason now for great apprehension as to the outcome of crops. Then, too, a large amount of minerals—coal, iron ore, gold, silver, lead and zinc—that are being mined in the vast regions beneath us, all go to make wealth and prosperity.

Rail and lake transportation lines are very busy at the present time, and an immense amount of merchandise is being moved in all directions.

The demand for Structural Steel, Merchant Pipe, Sheets and Plates is very large at this time. It is said the mills in the Pittsburgh District are working full time, without any thought of a summer vacation. There

is also a loud call for manufactured Hardware. A large number of buildings that have been erected during the spring and summer are now about ready for trimmings or finishing Hardware, the better class of goods having the call.

Prices for the most part are steady. Many merchants are inquiring for goods for shipment later in the fall and following season. There has been a desire on the part of some merchants to place their orders for agricultural implements for next season's use, but owing to the scarcity of handle-timber, causing an advance in handles, as also the advance in labor and steel, manufacturers will not make any prices at present.

Many salesmen are now taking their summer vacations, but from those who are at work we are receiving well assorted orders, and our mail order business is very large at present. General Hardware business at this time is very good, and we look for a steady trade during midsummer and early fall. There is a steady demand for Fence Wire and Nails.

As this has been an unusually good hay season, a large number of Scythes, Snaths and Haying Tools of all kinds are wanted now. Although large orders for these goods were placed and shipped early in the season, assortments are broken and many duplicate orders are being placed for quick shipment.

Philadelphia.

SUPPLER HARDWARE COMPANY.—Notwithstanding that we are now in the midst of midsummer trade, with the usual vacations of employees as well as the yearly vacations taken by quite a number of local trade customers throughout our territory, there is a good volume of business up to date, with all appearances of its probable continuation during the summer and into the fall months. And if we may judge from the continued advance in price of raw material and in the wages of employees of manufacturers throughout the country, it may be expected that there will be no decline in prices of Hardware.

Manufacturers appear quite satisfied with orders on hand from jobbers and those which they daily receive; therefore, there appears to be the same necessity for jobbers placing their orders in advance of their actual wants, in order to secure stock and supply their trade.

Orders received within the last few months extend over a great portion of the entire line of Hardware carried by the jobbing trade. The sales of Builders' Hardware, from Locks to smaller articles, continue in fairly good proportions, and orders on some other lines of goods have been larger than on the same goods for previous years.

Collections during the past month have somewhat improved.

New Orleans.

WOODWARD, WIGHT & Co.—The hot weather is on us for good down here now, and we are getting a steady stretch of what we call our summer heat—that is, 88 to 93 degrees, seldom going above that, while New York, Chicago, and the other cooler sections of the country are having it from 98 to 105 degrees in the shade. New Orleans has the reputation of being a hot city, but when you consider that there has practically not been a sunstroke in this city in the last two or three years, and probably not more than four or five heat prostrations a year in the last 10 years, and compare that with the record breaking work of our friends, the Elks, in Philadelphia, it certainly looks as if there is some justification in the advertisement that one of our daily papers is running, exploiting New Orleans as a summer resort.

It used to be that about the first of May the Hardware merchant, and practically everybody else, quit business. Those that had money went away and staid three or four months, leaving their business entirely in the hands of their cashier, who drew checks, managed the purchases (the few that were necessary), received all the money, and hired and dismissed everybody during the employer's absence. Now, the busiest season in the year in New Orleans is really from the first of June to the

first of November, although there is really no dull season here except directly around the Christmas holidays.

While we are not a manufacturing center in the sense that many Northern cities are, we have a decent amount of money invested in cigar and tobacco manufactories, machine shops, furniture factories, rice mills, plants for turning out cotton seed and its products, sugar factories and refineries, coffee roasters and grinders, &c.

The section immediately around here—that is, from Galveston to Pensacola, is partly strictly agricultural, such as cotton and rice, and partly a sort of agricultural and manufacturing mixed, such as saw mills and raising and manufacturing sugar. In other words, it is now a combination section, where the agricultural predominates, but manufacturing industries are to be found everywhere. As a consequence of this, while the four or five hottest months of the year bring about the best trade that any of us have, yet there is always a steady, year-round business, enough to keep everybody up to the mark for the remaining seven or eight months.

Prospects for sugar and rice continue good. There is no change in the cotton outlook, the bulls being just as decidedly bullish, and the bears being just as decidedly bearish as before. The lumber trade is doing pretty well, but still has a little slackness to it, and this probably will continue, unless the great car manufacturing companies come into the market for requirements. If they do, we look to see lumber advance quite a little. We think now that a slight movement either way will change the present scale of lumber prices.

Banking conditions throughout this section of the South are much better than they were this time last year, and while nobody here is laying in any tremendous stocks of goods from the idea that there will be a speculative advance, yet there is a healthy feeling of confidence in the future of the whole United States, and a feeling of confidence in the financial health of this section and the tremendous increase of its wealth in the last five years, irrespective of circumstances and general conditions elsewhere.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—The months of July and August are seldom marked by any special activity in jobbing circles. The volume of business, however, still continues very satisfactory. The harvest of small grains just completed showed a heavy yield and of excellent quality. The weather continues propitious for the ripening of corn, and every indication points to a large crop. Industrial and commercial activity is well maintained, and the general outlook is especially favorable.

The Hardware market is comparatively featureless, and as most lines appear to occupy a fairly firm position it is more than likely that values, as a rule, will maintain the *statu quo* for the remainder of the year.

Boston.

BIGELOW & DOWSE COMPANY.—Boston is decked in holiday attire in preparation for "Home Week." All kinds of entertainments are arranged for the comfort and amusement of the crowds who are expected to join us in our holiday week. A hearty welcome awaits all that come. There is a bit of the Western enthusiasm in the boom to make Boston a "Bigger, Better and Busier" city. New England has reason to be well satisfied with present conditions that have existed for the past two years and still continue. The volume of business is steadily increasing and each month sales are greater than those of the previous year. Continuous warm weather with a fair amount of moisture is favorable to the growing crops, which promise a normal yield at harvest time. Fruits of all kinds have suffered from the late spring and the yield will be light and of poor quality.

Prices of Hardware remain firm, except in a few lines that have been reduced by the slight decline in copper. Nothing indicates lower prices the coming fall.

Orders cover full lines, indicating that retailers are satisfied to carry well assorted stocks. There is still great difficulty in getting prompt shipments from the factories.

If the trouble in the iron mines develops a general strike of the miners, the stopping of our supplies must have a serious effect on the output of the steel mills, who even now are unable to supply the demand for their products.

It seems the part of wisdom to keep stock fully assorted. It is a good time to get rid of unsalable goods and a good time to have your salable stock in shape to meet the demand that is sure to come in the next few months.

Portland, Oregon.

FAILING, HAINES & MCCALMAN.—There is nothing new to say about this territory. Business continues without any sign of the usual summer slump. Crops continue to promise well. Lumber and all the local industries are in an extremely prosperous condition. New railroad construction, the erection of new buildings and the opening of new territory all combine to help the unusual prosperity. Money is plentiful, in marked contrast to the stringency in other coast sections.

The Chamber of Commerce officials have informed us that probably more settlers are coming into this country this year than ever before in the history of the State. This influx of immigrants is very largely caused by the favorable reports of the visitors for the last two years since the Lewis and Clark Fair. This immigration being based on solid ground will undoubtedly continue for several years, and this alone will be a great aid in continuing the present prosperity of this section.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The weather has been so uncomfortably warm for the past two weeks that it has to a great extent affected business. It has been so warm that people have not felt like doing any more work than was absolutely necessary, and has been particularly hard on laborers who have had to work outdoors in the sunshine, and on all kinds of draft horses, mules, &c., but, while suffering humanity has been diligently searching for a cool place, the cotton planter in his rural retreat is wearing a broad smile, for, while hot weather is a punishment to the city people, it is the making of the cotton crop. The reports we are receiving from the cotton section for the past few weeks have been encouraging. While the crop was very backward and at one time looked as though it would be a total failure, the favorable weather has made a wonderful change in its condition, and with the continued warm nights and occasional rains the indications are that cotton will be much better than has been anticipated. These warm nights have also been beneficial to other growing crops.

Business is about as it usually is at this season, and we think that the prospects for a good fall business are growing brighter each day. Prices are pretty well maintained. Collections are satisfactory.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The very warm weather continues. Crop conditions are improving. Business is coming in satisfactory volume. A feature of the situation is the large number of new stocks that are being bought. Most of them are going to the West and Southwest. Mail orders are also numerous, indicating a good retail demand.

Money is reported as being "fashionable" and interest rates are ruling high. Collections are not as good as they have been.

Customers and salesmen are feeling much more cheerful over improved crop conditions. Manufacturers are shipping more promptly, and as a result jobbers are filling their fall orders better and earlier than last year.

In this city common labor is scarce and of very poor quality. The horny-handed son of toil does not enjoy wrestling with reels of Barbed Wire. The "extra" men we take on try it a few days and then quit. They seem to be looking for easy jobs. Recently there was a strike of deck hands, and one of our steamers left this port with negro roustabouts drawing \$50 per month.

NOTES ON PRICES.

Wire Nails.—The requirements of the trade continue remarkably large for the season, and with the excellent demand there promises to be a steady movement until fall trade opens actively. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.00
Carload lots, to retail merchants.....	2.05

New York.—There is a continued demand for Wire Nails in this market, somewhat beyond the expectations of jobbers for the season. The local market is generally maintained, except that sometimes Hardware jobbers sell Nails at less than regular quotations to influence the sale of other goods. New York jobbers' quotations are: To retailers, carloads, on dock, \$2.19; less than carloads, on dock, \$2.33; small lots at store, \$2.30.

Chicago.—Demand, though somewhat less insistent in tone and volume, is still remarkably good for the season. Salesmen of the American Wire & Steel Company returning to the field from their convention, held here last week, will actively begin the campaign for fall business at once. Quotations are as follows: \$2.18 in car lots to jobbers and \$2.23 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The demand on the mills continues very good, and no stocks are accumulating. Prices are firmly maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.00
Carload lots, to retail merchants.....	2.05

Cut Nails.—A fair demand is reported, but mills are still somewhat behind on deliveries. At a meeting of the Cut Nail Association held to-day (Wednesday) the mill price was advanced 5 cents per keg, making quotations as follows, f. o. b., Pittsburgh: Carload lots, to jobbers, \$2.10; less than carloads, to jobbers, \$2.15; less than carloads, to retailers, \$2.25. Iron Cut Nails at points west of and including Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

New York.—For the past two or three weeks jobbers have noticed a demand for Cut Nails in excess of that for the past three or four years. Instances are reported of a larger number of kegs of Cut Nails having been sold on some days by jobbers than of Wire Nails, the Wire Nails usually preponderating largely. Prices are generally maintained, except as jobbers sometimes cut prices. New York jobbers' quotations are on the basis of \$2.30 for small lots at store.

Chicago.—Although for the past week trade has been somewhat quieter there is nevertheless a fair demand for what is considered the quiet month of the season. Prices are unchanged and no serious complaints of shading are heard. Quotations are as follows: Iron Cut Nails, car lots, to jobbers, \$2.33; to retailers, \$2.38; Steel, to jobbers, in car lots, \$2.33; to retailers, \$2.28.

Pittsburgh.—The demand is slightly improved, and prices are cut only occasionally. Regular quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, \$2.10; less than carloads, to jobbers, \$2.15; less than carloads, to retailers, \$2.25. Iron Cut Nails at points west of and including Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

Barb Wire.—The mills are making shipments more promptly on contract orders. Current demand in the way of new business is light. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.15	\$2.45
Retailers, carload lots.....	2.20	2.50
Retailers, less than carload lots.....	2.30	2.60

Chicago.—But little new business is coming forward, though shipments continue in good volume. Mills are now fairly well up on deliveries. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.33; Galvanized, \$2.63; to retailers, car lots, Painted, \$2.38; Galvanized, \$2.68; retailers, less than car lots, Painted, \$2.50; Galvanized, \$2.80; Staples, Bright, in car lots, \$2.30; Gal-

vanized, \$2.60; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Deliveries are fairly good on Barb Wire, and prices are firmly maintained, as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.15	\$2.45
Retailers, carload lots.....	2.20	2.50
Retailers, less than carload lots.....	2.30	2.60

Smooth Fence Wire.—Manufacturers using Wire in their products are now placing orders for forward delivery. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.85
Retailers, carloads.....	1.90

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55	.65	.75
Galvanized.....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago.—Attention is now mainly directed to the closing of contracts for fall requirements. Mills report a good business being done in forward contracts, which reflects a feeling of confidence among those closest in touch with consumers. Quotations are as follows: In car lots, to jobbers, \$2.03, f.o.b. Chicago, and to retailers, \$2.10.

Pittsburgh.—Specifications are good on contracts recently booked, and contracts are still being placed. We quote f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.85
Retailers, carloads.....	1.90

Brass Cocks.—Concessions are generally reported in manufacturers' quotations on Brass Cocks, both Compression Bibbs and Hardware grades. It is understood that the makers of these goods still have considerable stocks of raw material purchased before the recent decline, and an effort is being made to maintain the price of the finished products. This, however, has apparently been unsuccessful, as current quotations to good buyers are about 10 per cent. lower than a few weeks ago.

Copper Hollowware.—The long expected break in Copper metal has been reflected with surprising quickness in quotations for hollowware, both Copper and Nickel Plated on Copper. The prices of several leading manufacturers have been reduced 5 per cent. or more. It is agreed, nevertheless, that the volume of business has held steady and encouraging, and fall contracts for record quantities are being placed several weeks earlier than usual to insure delivery when wanted. There are many merchants who do not wish to repeat their experience of last fall, when they were unable to secure shipment of late placed orders before the holiday season.

Sash Cord.—The Sash Cord market continues a point of interest for buyers, inasmuch as several producers and selling agents still hint at the possibility of an advance. Their predictions are based on recent advances in the cost of yarn and the probability of a not better than moderate cotton crop. It would appear that while an advance might be welcomed by smaller manufacturers who are obliged to procure yarn from outside sources, the present price of Cord is high enough to be remunerative to the larger houses who receive adequate supplies of yarn from their own mills. Orders now being placed are said to be light, and some manufacturers at least have good stocks.

Cedar Faucets.—Higher prices are generally reported on Cedar Faucets, quotations of some manufacturers showing advances of from 10 to 15 per cent.

Acme Automatic Ash Sifter.—The Acme Automatic Ash Sifter put on the market by the Acme Ball Bearing Sales Company, 56 Warren street, New York, and described in another column of this issue, is sold to the trade at \$3.20 each, net.

Rope.—Business continues comparatively light. Orders are for small quantities, though perhaps as numerous in number. Not much change is anticipated for the

next two or three weeks, or until the vacation season is over. Under these conditions card prices, represented by the following quotations, are not adhered to in all instances, with the exception of Bolt and high grades of Manila Rope, which are maintained. Quotations are as follows: Pure Manila, 13 to 13½ cents; B quality, 12 to 12½ cents. Pure Sisal, 9¼ cents; No. 2 quality, 7¾ to 8 cents; No. 1 Jute, ¼ in. and up, 9 cents; No. 2 Jute, 8½ cents.

Binder Twine.—The harvest of winter wheat, which is about completed, has shown a short crop, and in most sections light straw, so that the consumption of Twine has probably been less than the average per acre of harvested grain. Hopes are entertained that the amount of Twine required for the oat crop will not be much below the average. The market has held fairly firm, considering conditions, but there has no doubt been some shading in prices in one way or another. Prices on Sisal and Standard range at about 9 to 9½ cents per pound, central delivery, demand being largely confined to these two grades of Twine.

Window Glass.—According to reports most jobbers are buying only for present requirements. Job lots, formerly held by factories, are said to have been about all sold, which has a tendency to create firmer market conditions. It is anticipated that within two or three weeks more activity in the way of replenishing stocks will be shown. With light demand jobbers' quotations are not always held to. In Greater New York jobbers' quotations from jobbers' list, October 1, 1903, which, it will be remembered, is about 20 per cent. higher than the manufacturers' list, January 1, 1901, are 90 and 15 per cent. discount on all sizes, single and double strength. Outside Greater New York no quotations that would represent the market fairly are available.

White Lead in Oil.—Demand for this season is fair, and manufacturers are quite busy in filling contract orders and taking care of current business. The Pig Lead market shows some weakness, but no change has been made in card prices for the finished product, which are as follows: In lots of 500 pounds or over, 7½ cents per pound; in lots less than 500 pounds, 8 cents per pound.

Linseed Oil.—On July 29 a reduction of 2 cents per gallon was made by the crushers in the price of Oil, the basis now being 43 cents for City Raw and 42 cents for Out of Town Raw, in carload lots, with an advance of 1 cent. per gallon for Boiled Oil. Representatives of some crushers are, however, offering Out of Town Raw on the basis of 39 cents per gallon for carload lots. The position of the market has been too uncertain to cause buyers to anticipate their wants, and it is questionable whether the lower prices will stimulate buying to any considerable extent. The present outlook is for a record breaking crop of Flax Seed, now estimated in the neighborhood of 40,000,000 bushels. The crop is not yet safe from frost and other unfavorable climatic conditions, but large buyers' views for Oil are at present 36 cents per gallon, and lower. New business is light, with a fairly active movement on contract orders. New York quotations are as follows: City Raw, 43 to 44 cents per gallon, according to quantity; Out of Town Raw, 40 to 43 cents per gallon for jobbing lots, according to seller, and 1 cent less for carload lots. Boiled Oil is 1 cent a gallon over Raw.

Spirits Turpentine.—Absence of demand in Southern markets has caused a drop in prices of 1½ cents during the week. The policy of waiting for lower prices by purchasers is one explanation given for the decline, while other reports state that values were depressed by large operators, who are short on the market. Local demand is light. New York quotations are as follows, according to quantity: Oil Barrels, 58 to 58½ cents; Machine Made Barrels, 58½ to 59 cents per gallon.

JOHN H. GRAHAM & Co., 113 Chambers street, New York, announce that they have just been appointed sole sales agents for Geo. W. Griffin & Co., Franklin, N. H., manufacturers of the Griffin Hack Saw Blades, Bracket Saws, Coping Saws, &c.

CATALOGUE OF MARSHALL-WELLS HARDWARE COMPANY.

THE Marshall-Wells Hardware Company, Duluth, Minn., has just issued its complete general catalogue, which has been in process of preparation for many months. It is probably the largest publication of its kind ever distributed, and in other respects represents noteworthy advances in Hardware catalogue compilation. Page numbers run to something over 5000, but the actual number of pages is considerably less, as there are occasional gaps to provide for the insertion of new pages under the various classifications without interfering with the sequence. The company will keep a record of each catalogue sent out and will supply new sheets to merchants as they are issued, embodying changes and additions, so that every book may be kept up to date. On the inside front cover is a blank for the recording of freight rates for all classifications on carload and less than carload lots from the company's establishment to the city or town of the customer to whom the catalogue is issued, while in the back of the book a number of pages are devoted to giving general information regarding the proper method of receipting for shipments and presenting claims against transportation companies, followed by carload ratings and the complete Western freight classification. It will be remembered that besides its headquarters at Duluth the company maintains branch offices and large warehouses at Portland, Ore., and Winnipeg, Manitoba.

The main body of the catalogue is admirably arranged with a tab index covering the following general departments of stock: Builders' Hardware, Miscellaneous Tools, Farm and Logging Tools, Paints, House Furnishing Goods, Stoves, Mine and Mill Supplies, Cutlery, Sporting Goods, Fishing Tackle and Bicycles, Harness and Saddlery Hardware. There is a complete alphabetical index, and at the tab leaf for each department are both quick finding and alphabetical indexes to facilitate rapid reference. In many departments also are a number of pages of useful matter, affording valuable information as to estimating, ordering, and handling goods. In response to the growing demand of the trade descriptions of goods are detailed and complete, enabling the buyer to determine accurately the nature and quality of the articles he orders.

A notable feature of the catalogue is the self-indexing numbering system, which was devised by the company and a patent for which has been applied for. Every item of stock takes its number from the catalogue page on which it appears, a letter being added to distinguish it and its location. This makes it a simple matter to make up and fill orders by number and facilitates the promptness and economy of the company's service to its customers. Where manufacturers' numbers are long established and well known they are placed in parentheses following the company's numbers.

Taken all in all, the publication is a monumental one, on which the company merits not only the appreciation of its customers who have been favored with copies of the catalogue, but the congratulation and emulation of the trade.

THE PRITCHARD-STRONG COMPANY, Rochester, N. Y., has recently concluded its window display contest in the interest of its Prisco Lanterns, which proved a most decided success, the company receiving many clever and original ideas for window dressing. The display submitted by the Murphy-Maclay Hardware Company, Great Falls, Mont., was regarded as the best. This exhibit was arranged to represent a store devoted to the sale of Prisco Lanterns, and was designated the "Prisco Store." The striking feature of the display was the fact that all the Lanterns on the shelves of the "Store," this shelving forming the background to the window, were illuminated, each Lantern having a four candle power electric light. The top row of Lanterns had red colored globes, the middle row white and the bottom row blue. This color scheme contributed a pretty effect, and made a decided hit. The next display in point of merit was that of the Rudge & Guenzel Company, Omaha, Neb. This was a

very effective window exhibit, possessing all the requirements of a trade winning display. It attracted much attention from passers-by during the 10 days in which it held forth.

Correspondence.

AGAINST PARCELS POST.

To the Editor:—Prominence has been given in some of the trade papers to the resolution recently adopted by one of the shippers' associations in Buffalo favoring the introduction of the European parcels post into the United States postal service, and the inference has been widely drawn by the trade that this company is in favor of such action by our Government.

As such action would be hostile to the trade and consequently detrimental to the interests of this country, we would be grateful if you would prominently notice that our company vigorously opposed the resolution while it was before the shippers' association, and is still decidedly opposed to the so-called parcels post.

THE REPUBLIC METALWARE COMPANY.

BUFFALO, N. Y., July 29, 1907.

MICHIGAN HARDWARE CONVENTION.

THE programme arranged for the thirteenth annual convention of the Michigan Retail Hardware Association, which will be held at the Cadillac Hotel, August 14, 15 and 16, gives promise of an interesting and businesslike gathering. The sessions of the convention will be held in the afternoon, the mornings being reserved for the use of the members in inspecting the numerous Hardware exhibits made by manufacturers and jobbers and in visiting Detroit plants and business houses. The opening session will be held on Wednesday afternoon. The special feature of this session will be a discussion of pure Paint and legislation designed to effect this, formal addresses being made by E. W. Heath of Chicago, chairman of the Legislative Committee of the United States Paint Manufacturers' Association, and by a representative of the National Lead Company. The Thursday afternoon session will be given up to the reading of specially prepared papers on practical trade topics, addresses by representatives of the national associations of retail and wholesale merchants and manufacturers, and the question box, which will be under the efficient charge of A. T. Stebbins, Rochester, Minn., vice-president of the National Retail Hardware Association. The closing session, on Friday afternoon, will be devoted to routine matters. A fine programme of entertainment has also been provided.

I. J. CLARK, secretary of the Chicago Flexible Shaft Company, Chicago, received injuries in an automobile accident on July 11, near Bryan, Ohio, which three days later, on July 14, resulted in his death at that place. Mr. Clark, who was an enthusiastic motorist, had entered his machine in the Glidden tour from Cleveland to Chicago, and thence to New York. Through an accident the machine was overturned and falling upon Mr. Clark inflicted injuries that proved fatal. Born in New York 37 years ago Mr. Clark came to Chicago in 1890 and began making Horse Clippers operated by flexible shafts. The industry thus started rapidly expanded into the extensive manufacturing plant of the present Chicago Flexible Shaft Company. Taking a great interest in automobiles, Mr. Clark invented a speedometer, which led to the formation of the Stewart & Clark Mfg. Company, maker of automobile specialties, of which he was also secretary. Included in the party with him at the time of the accident was E. W. McGookin, Chicago, and Peter Fahey, Cleveland, neither of whom was seriously hurt.

C. E. KERSEY, P. O. Box 654, Richmond, Va., has been chosen secretary-treasurer of the Southern Hardware Jobbers' Association, succeeding W. W. Webber, Fort Smith, Ark.

THE CALIFORNIA ANTI-TRUST LAW.

SINCE the enactment in California of the so-called Cartwright law, May 19 last, by the Legislature, the purpose of which is to regulate trade originating with trusts or combinations, located within or outside the State, there has been a degree of uncertainty among business men, especially in the East, as to its scope and effect. This has led some manufacturers of what may be called trust goods to change materially their methods of handling their California trade, but this has been done only as a precaution and not from any proceedings initiated under California authority.

According to advices from high authoritative sources there is nothing to prevent manufacturers, either in combination or not, from shipping into the State any goods at a fixed selling price and under such regulations as may be deemed necessary by the shippers. Neither is the privilege of sending salesmen or other agents there to sell or influence the sale of merchandise abridged in the least. The statute unquestionably does not prevent mutual agreement or concert of action on prices by parties in California and this phase of the law is being respected.

It has been decided by high federal courts that a manufacturer or merchant controlling by patent, trademark, copyright, &c., any article, can establish a price for which it may be sold, and the Cartwright law does not impair that right or endanger in any way payment therefore. It is common knowledge that no Legislature has jurisdiction over individuals or groups of individuals outside its boundaries. When, however, residents or citizens of California, doing business under its laws, enter into an agreement or combination regarding the establishment of a fixed price on commodities, the case becomes subject to the provisions of this enactment, there being a penalty of \$50 for each day's violation.

This law is said to be based on the national Sherman Anti-Trust act, and with only necessary modifications, framed after the Valentine act in Ohio, which has been in force for a number of years. Merchants of high standing in California assert unqualifiedly, that in the absence of any agreement or combination on price entered into by associations, merchants or others amenable to California laws, the status is in no way altered as between sellers outside the State and buyers established in California.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM C. H. HALL, who has succeeded Hall & Harrison, in Verona, Neb., handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods.

FROM WIXSON BROS. COMPANY, Milwaukee, Wis., which is desirous of adding to its line of Hardware Specialties, &c.

FROM LONG & SORENSON, who have succeeded the Sweetwater Hardware & Furniture Company, in Sweetwater, Tex. The firm handles Shelf and Heavy Hardware, Stoves, Tinware and Agricultural Implements.

FROM MILES HARDWARE COMPANY, Mason City, Iowa, whose store was badly damaged by fire a short time since. The insurance has been adjusted and the stock cleaned up, and a big fire sale was inaugurated on the 24th ult. The company's collection of manufacturers' printed matter was destroyed in the fire, and copies of new catalogues and price-lists are requested, with discounts.

A CITY MERCHANT'S METHODS OF PUSHING DOG COLLARS.

IT has been the experience of a number of retail Hardwaremen that the line of Dog Collars while not of much account if handled in a desultory way, can be made an exceedingly satisfactory and remunerative one for city merchants if properly featured. Dog Collars are showy things, and a good line of samples makes an exceedingly attractive display. There is, moreover, a broadening mar-

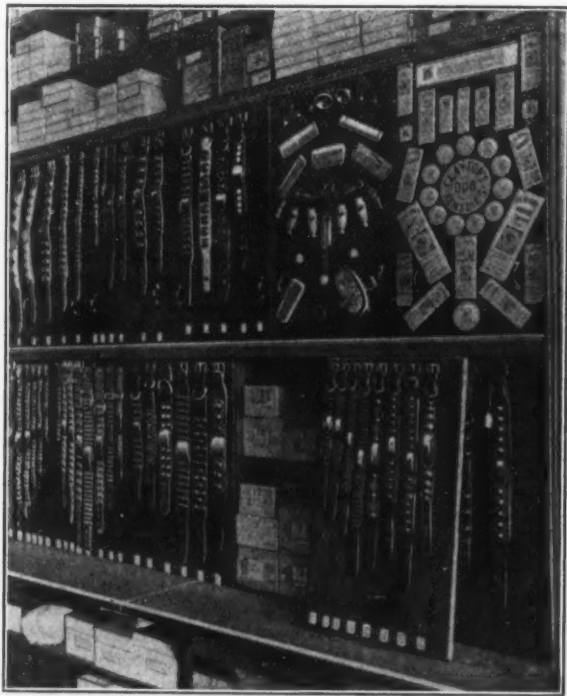


Fig. 1.—Shelving and Sample Boards Devoted to Dog Collars.

ket for Collars in many sections due to new or increasingly stringent local ordinances.

The John E. Bassett & Co., New Haven, Conn., is a concern which, after handling a few collars in a half-hearted way, decided to go in for the line on a liberal scale and see if it could not be made to pay. We have it on the authority of George J. Bassett that the experiment was an entirely successful one, and the concern now devotes a section of valuable shelving space to its line of Collars, a portion of which is shown in Fig. 1, while it also has had made to order the special Dog Collar showcase with round-front glass front, shown in Fig. 2. By reference to Fig. 1 it will be seen that the shelves in which the stock of Collars is kept are fronted by sample boards displaying an exceedingly extensive line. The section behind each

Made to Pay.

Arrangement of Stock.

sample board is numbered, and all stock kept in that section carries this number in addition to the manufacturer's number indicating the style of Collar. Under each Collar on the sample boards are pasters on which the number of the section in which the stock is kept is recorded, together with the manufacturer's number, &c. Thus after a customer has selected the Collar that he wants by examining the samples, it is a simple matter to find the duplicate in stock. In the illustration the sample board which is removed shows section 12, that number

being plainly visible on the boxes behind. Other numbers, &c., are of course too small to be brought out in a cut of this size.

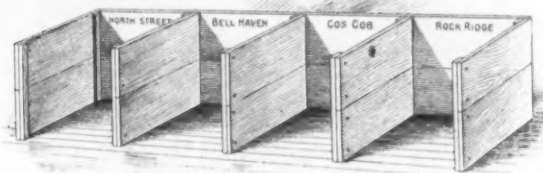
The boards are covered with dark red cloth and have small brass pulls, which facilitate handling them. Two of the sections of shelving, as will be seen, are devoted to dog remedies and accessories other than collars, such as Whistles, Brushes, Combs, &c., which are also attractively sampled.

Referring to the showcase shown in Fig. 2 but little description is necessary, since its method of construction is entirely clear from the illustration. It occupies space on the inside edge of the glass counter case, which stands in front of the shelving where the Dog Collars are kept, the sample boards appearing indistinctly in the cut. The case, of course, contains samples of the most elaborate and expensive Collars and shows them in the natural circular position of actual use. By the employment of these methods the firm has caused itself to be recognized as headquarters for Dog Collars in its locality and has succeeded in raising the average price of the Collars sold to a figure which it would have scarcely credited a short time ago.

Special Showcase.

BINS FOR GOODS TO BE DELIVERED.

IN the rear part of the store of D. K. Allen, Greenwich, Conn., are convenient and inexpensive bins in which goods to be delivered in town and to different places in the surrounding country are placed. An idea of the appearance of the bins may be gained from the accompanying illustration. The bins, constructed of $\frac{7}{8}$ -in. surfaced lumber, 12 in. wide and about 2 ft. square,



Bins for Goods to Be Delivered.

are built on the store floor, the destination of the goods being painted on the inside of each bin, near the top. Goods when sold are placed in the respective bins, and the driver of the wagon can arrange his route for the expeditious delivery of the merchandise without further questioning.

THE GEO. W. PITKIN COMPANY has issued a post card giving a view of its new plant at Benton Harbor, Mich.,



Fig. 2.—Special Dog Collar Showcase.

of which possession was taken May 1. The new plant occupies five acres of ground, and with its increased facilities the company is in better position to take care of its customers than when located in Chicago.

THE annual outing tendered by the Wire Goods Company, Worcester, Mass., to its employees was held on the 26th ult. The scene of the outing was Revere Beach, where the entire day was spent. The occasion was an exceptionally enjoyable one.

The Trades 100 Years Ago.

First Article.

The following article with the accompanying illustration is taken from the "Book of Trades, or Library of the Useful Arts," which was published in 1807 by Jacob Johnson, London, and at that time for sale in his book-stores in Philadelphia and Richmond, Va.

The Cutler.

The cutler makes Knives, Forks, Razors, Scissors, Lancets and all other sorts of cutting instruments. The chief art in this business consists in bringing the steel to a just temper, for which no particular rules can be given, as it can be acquired only by practice.

The principal places in this country for the manufacture of Cutlery wares are Birmingham and Sheffield, and at these towns



A Cutler

goods of all kinds in steel are made much cheaper than in any other part of the world. In London the same goods bear a much higher price than those manufactured in the country, though the latter may be as good in quality but perhaps not so neatly finished or so highly polished. It is said, however, not to be a very uncommon practice for London cutlers to fix their own names and marks on goods wrought at Birmingham or Sheffield, by which means they charge for them the price of town-made goods.

The blades of Knives and Forks are forged by fire; and after they are brought to the proper shape and size, they are then polished, ground and put into the handles.

The man represented in the back of the plate is supposed to be forging some instrument, while the other in the front is grinding a Knife on the stone, which is turned around by the laborer at the wheel. On the ground are supposed to lie a pair of Irons for Skates and two Swordblades. The manufacture of Skates is a considerable part of the cutler's business in severe winters; and in some of the principal shops Swords

are also mounted, but this does not properly belong to the cutler's profession.

The sword-blades almost all come from abroad, where they are forged by large hammers moved by water-mills. In this manner the celebrated sword-blades of Vienna are made. Here the cutler is only concerned in mounting the blades, and in making the scabbards, the expense of which may be carried to almost any extent. It is no uncommon thing for a sword highly finished to be worth from 150 to 300 guineas; many of these have within these few years been presented to naval and military officers by a society called the "Patriotic Fund," who have associated for the express purpose of rewarding those heroes who have performed any great exploits in their country's service.

The manufacture of razors is another part of the cutler's business. As shaving to most people is a very painful operation cutlers in different countries have long exerted all their skill to remove the inconvenience, but without that sort of success that may always be relied on. To whatever price we go for razors we cannot depend upon its goodness; and it often happens that in a case of razors purchased at Sheffield at a shilling apiece one may find as many good ones as in a case bought in London at ten times the price.

The handles of knives are chiefly made of ivory, which is cut from the tusks or teeth of the elephant. They are brought to us from the East Indies, and from a particular part of Africa. They are valuable in proportion to their size. Ivory may be turned into wood, and it may, by a chemical process, be softened, worked to any particular form and hardened again. There are methods also of coloring or staining ivory, so that we have red and green ivory as well as white.

The surgical instrument-maker is another species of cutler: He makes use of the best steel, and is supposed to be more careful in finishing his instruments with a neater polish than the common cutler.

It has been recommended by a professional gentleman to dip all surgical instruments in oil previously to using, except the lancet intended for inoculation.

A journeyman cutler will with ease earn two guineas a week; those employed in the bettermost sorts of work much more. In all large shops of business one man is employed a certain number of days in each week in grinding old work; and this part of the business pays the master well.

THE CHICAGO RETAIL HARDWARE ASSOCIATION held its twelfth annual picnic on July 24, at Northwestern Park, not far from the city. Favored by beautiful weather, well filled lunch baskets and a general disposition to enjoy the occasion, the picnic lacked none of the interest and pleasure that has marked like gatherings of former seasons. Quite an extended programme was prepared, which included target shooting, races, games and athletic contests. Much enthusiasm and interest was displayed in these entertainments, and the list of prizes awarded included a large variety of articles, the majority of which were selected from Hardware stocks. An interesting feature of the occasion was an address delivered by Fernando Jones, one of Chicago's oldest citizens, and also one of the earliest to engage in the Hardware business in that city. He was a member of the Hardware firm of Jones & King, established in Chicago in 1834. The State Association was represented at the picnic by President T. J. Mathews and Secretary L. D. Nish.

HANDY COMPARISON OF HARDWARE FINISHES.

BOMMER BROTHERS, Brooklyn, N. Y., manufacturers of the well-known line of Bommer Spring Hinges, have just published a circular giving the accompanying table of comparison of Hardware finishes. Copies may be had for the asking and the firm will be pleased to supply merchants a sufficient quantity to equip all their salesmen. In getting up this table the object was to enable merchants conveniently to furnish Bommer Spring

DESCRIPTION.	Bommer Bro's	P. & F Corbin	Russell & Erwin	Yale & Towne	Reading Hdw. Co.	Sargent & Co.
Brass or Brass plated, natural color.....	A	A	10	A Z 10	31	B
Bronze or Bronze plated, natural color..	B	B	11	B Z 10	1	P
Copper plated, natural color.....	C	CC	.....	C Z 10	21	.....
Nickel " highly polished	N	E	4	N Z 10	80	N
Silver " "	X	BS	5	S Z 10	41	.....
Dull or old Brass	DA	EA	9	A Y 22	37	O B
Antique Brass, mottled	MA	HA	9 1/2	A Z 17	34	E B
" " light	LA	KA	9 C	A Y 24	32	O E
Dull Bronze.....	DB	EB	121	B Y 22	.....	O P
Antique Bronze, light	LB	KB	2	B Y 24	.....	.....
" " Copper, mottled.....	MC	R	7 1/2	C Z 17	24	A B
" " light	LC	ER	.....	C Y 22	22	L B
Statuary or chocolate finish	OC	LB	7	B Y 65	2	A
Dull Silver	DX	ES	18	S Y 22	47	L S
Antique Silver, mottled	MX	.....	8 1/2	S Y 17	44	A S
" " light	LX	KS	8	S Y 24	42	A S light
Sand blast Brass, natural color	SA	SEA	0 9	A X 22	38	R E
" " " Antique mottled.....	SMA	SHA	0 9 1/2	A X 17	35	R K
" " " " light	SLA	SKA	0 9 C	A X 24	33	R D
" " " Copper " mottled.....	SMC	SR	0 7 1/2	C X 17	25	R B
" " " " light	SLC	SER	27	C X 24	23	R L
" " " " chocolate	SOC	SLB	0 7	B X 65	.....	R A
" " " Silver, natural color	SX	SES	28	S X 22	48	R S
" " " Antique Silver, mottled	SMX	.....	0 8 1/2	S X 17	.....	R O
" " " " light	SLX	SKS	0 8	S X 24	49	R H
Bower Barff	R	F	46	F X 80	87	B B
" " " imitation electroplated	R I	K F	0 6	C X 16	87 1/2	B N
Verde Antique	V	V	36	B X 67	V A

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Comparison of Hardware Finishes.

Hinges to match any of the finishes of Builders' Hardware listed by the principal manufacturers. Such a comparison will doubtless be found useful, moreover, in figuring on contracts, enabling merchants readily to figure on special finishes other than those they are familiar with.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, etc., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

EMMERT MFG. COMPANY, Waynesboro, Pa.: Catalogue No. 7, devoted to the Emmert Patent Universal and Standard Vises.

HAWKEYE PUMP COMPANY, Washington, Iowa: Catalogue No. 10, illustrating Galvanized Steel Set Length Pumps for cisterns, houses and stock; Pump Curbs, Rural Free Delivery Mail Boxes, Storage Tanks, Garbage and Ash Cans, Hog or Sheep Dipping Tanks, Automatic Stock Fountains, Water Conductors, Float Valves, &c.

PITTSBURGH AUTOMATIC VISE & TOOL COMPANY, Pittsburgh, Pa.: Catalogue in black and white illustrating the company's special Automobile and Motor Boat Vise.

BARNEY & BERRY, Springfield, Mass.: Ice Skate catalogue for 1907-1908, illustrating a large variety of Skates, Ankle Support Skates, Skate Straps, Bags, &c.

STEWART & ROMAINE MFG. COMPANY & PHILADELPHIA
EXPANSION BOLT WORKS, 124 North Sixth street, Phila-
delphia, Pa.: Catalogue No. 27, illustrating Toggle or An-
chor Bolts in a number of styles and for different pur-
poses.

GOODELL COMPANY, Antrim, N. H., New York office, 10 Warren street: Illustrated folder devoted to Bread

Crumbers, Vegetable Mashers, Hand and Power Apple Parers and Vegetable Parers.

WESTERN CANADA HARDWARE CONVENTION.

ON July 24 the semiannual convention of the Western Retail Hardware Association was held at Winnipeg, the attendance being small, owing to the economic conditions and business activity resulting from the constant flow of immigration into the provinces between Lake Superior and the Rocky Mountains. Vice-President J. B. Curran, Brandon, Man., presided in the absence of President Falconer, Deloraine, Man.

At the annual convention six months ago Secretary J. E. McRobie, Winnipeg, reported the association's finances to be in bad shape, a large number of the members neglecting to forward their membership fees. In the interval an effort was made to wake up the backward ones, but the effort failed, and the secretary was forced to place the situation frankly before the members present. Though only about a score attended, letters were received from a large number of others, the opinion being unanimously expressed that it would be folly to let the work of three years go for naught by disbanding the organization. It was decided, therefore, to issue a circular letter to all members, making a frank statement of the work done and the possible effects of the disbandment of the association. It is felt that this will result in a prompt response, and the association finances again be placed on a sound basis.

Probably no part of America is more in need of retail organization than western Canada, merchants being forced to confront numerous evils which can only be dealt with satisfactorily by a trade association. Hundreds of thousands of people are locating in Manitoba, Saskatchewan and Alberta annually, hundreds of new stores are being opened up along the new lines of railway, jobbers are charged with being slow in forwarding invoices, and the railways seem unable to grapple with the transportation problem successfully; the banks are shortening their terms of credit, and while a few merchants have adopted the cash system, the many are still giving promiscuous credit, with certain losses through removals, &c. The catalogue house and "jobbers selling to consumers" evils are other matters which organization alone can deal with satisfactorily. The delegates at the Winnipeg convention acted wisely in deciding to continue the association, and their appeal to the delinquent members should meet with a prompt and satisfactory response.

Among the best friends of the association are the heads of the Winnipeg wholesale Hardware houses, and it was decided to express appreciation of the co-operation of the wholesale trade by electing the heads of these houses honorary members of the association.

THE Chicago office of the Wheeling Corrugating Company, Wheeling, W. Va., has lately issued a new price-list of Sheet Metal, Building Material and Supplies. A feature of the list is the addition of the line of galvanized ware now made by the company, including Coal Hods, Pails, Tubs, Ash and Garbage Cans, Oil Cans, Refrigerator Pans, Dry Measures, and Steel Baskets. A copy of the price-list will be mailed to any merchant on application.

N. L. WHITE & SON have purchased the business of the Brashear Hardware Company, in Brashear, Mo., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils and Sporting Goods.

THE TEXAS TAX ON THE SALE OF FIREARMS.

THE new law which was passed at the last session of the Texas Legislature imposing a tax on the sale of Firearms by merchants in that State goes into effect August 12. This law reads as follows:

Each and every individual, company, corporation or association created by the laws of this State, or any other State, who shall engage in his own name or in the name of others, or in the name of its representatives or agents in this State in the business of a wholesale or retail dealer of Pistols, shall, on or before the first day of July, 1907, and quarterly thereafter, make a report to the Controller of Public Accounts, under oath of the individual or of the president, treasurer or superintendent of said company, corporation or association, showing the gross amount collected and uncollected from any and all sales made within this State of all Firearms during the quarter next preceding. Such individuals, companies, corporations and associations at the time of making said report shall pay to the treasurer of the State of Texas an occupation tax for the quarter beginning on said date equal to 50 per cent. of said gross receipts from sales of all Firearms as shown by said report.

It will be readily understood that the effect of this new law will be practically to prohibit the sale of Pistols and other Firearms by Texas merchants. It will not, of course, prevent Texans from buying Firearms just as cheap as ever, for there are catalogue and mail order concerns outside the State and beyond its jurisdiction which will only be too glad to fill orders for the weapons under the ban. The presumed object of the new law—namely, the discouragement of the practice of carrying Guns and Pistols and providing revenue for the State's expenditures—will thus be completely defeated.

Letters from Merchants.

As will be noted from extracts given below from letters received from prominent Texas Hardwaremen the law is regarded by the trade as an extremely foolish and iniquitous piece of legislation, which will work nothing but mischief for local interests.

No Collusion Suspected.

In the following letter it will be observed that the writer exonerates the members of the Legislature from any suspicion of dishonorable collusion with the catalogue and mail order houses:

We do not know what this law is intended to accomplish. We have talked with several of the Senators and Representatives who voted for the measure, and, strange to say, they, themselves, do not know what it is intended to accomplish. It is a mystery why God created snakes and mosquitoes, and this Pistol law is another mystery which the Texas mind has not been able to solve.

The effect of it, however, is to stop the sale of Pistols by Texas merchants who pay the taxes and support all public enterprises in the State and to throw the trade to St. Louis and Chicago catalogue houses, who contribute nothing to the upbuilding of the State.

It will not decrease the sale of Pistols in Texas, but will increase the price which the people in Texas will have to pay for the goods. It will deprive the merchants of Texas of the profit, but will help the interstate transportation companies to some extent.

It is just another one of those fool laws passed by narrow and ignorant men which all of the States have to put up with. We know personally the majority of the members of the Texas Legislature, and we do not believe that any money was used by catalogue houses to secure the passage of this law. We take a charitable view of the matter and assume that the law originated in the mind of some honest but misguided \$2 per day statesman, and was voted on by a lot of \$2 per day men who were criminally careless in not studying the effects of the law before voting for it. The law, we understand from the Attorney General, goes into effect August 12, and will doubtless remain in effect until a more intelligent membership is elected to the Legislature.

An extract from another letter follows:

We presume the Legislature intended to decrease or entirely stop the sale of Pistols in Texas. We do not think, however, that they will accomplish this, as the dealers and catalogue houses outside of the State will have the privilege of filling orders from any one in Texas. It does effectually prevent the sale of Pistols by merchants in Texas, as the tax is 50 per cent. of the gross receipts on Pistols, or if handled in connection with

Guns and Rifles the tax would apply on these as well as Pistols, and would compel the merchants to sell them at double the price they are now getting, of which they would have to pay the State one-half. It is not reasonable to suppose that any one wanting to purchase a Pistol would pay twice as much to the local dealer as he would to a dealer outside of the State.

Will Not Stop or Reduce Sale.

In the following letter our correspondent expresses his conviction that the new law will not stop or even reduce the sale of Pistols in Texas:

The new Pistol law provides that a dealer has to pay a tax of 50 per cent. on the gross receipts derived from the sale of Firearms, or in other words, if he sells a Pistol for \$20, he has to pay a tax of \$10 to the State.

Before this law was passed, the catalogue houses sold a large proportion of Pistols in this State. In any event, they forced the local dealers to sell them with a very small margin of profit. Now, of course, they have the entire Pistol trade, as the Legislature cannot prevent citizens of one State from shipping goods into another State.

I consider this law one of the many absurd and ridiculous acts of our late Legislature. While the intent of the law may have been to prevent the sale of Pistols, and by this means reduce assaults and murders, it will never have this effect, as any one desiring to buy a Pistol, who has the money to pay for it, can order it from outside of the State just as cheap as he could before the law was passed.

Whether the catalogue houses had some good friends at Austin to help their cause, or whether the motive of our law makers was to reduce crime, I am unable to state at this time, but I insist that it will not stop or reduce the sale of Pistols in this State.

State Will Be Minus Revenue.

The merchant whose letter is given below feels that the present law against the carrying of weapons is adequate, and points out that the State will be deprived of all revenue from the sale of these goods:

The law placing a heavy tax on the sale of Pistols in this State can have but one of two objects—viz., further discouraging the use of the Pistol in this State and raising a revenue—but it fails to gain either object. It fails in the first instance because if the present law against the carrying of concealed weapons is not enforced the party wanting a Pistol will get it from a dealer out of the State who pays no prohibitive tax. In the second instance, no dealer can afford to pay the tax and make a profit, therefore the State will lose the revenue.

In terms more emphatic than polite, it is a fool law. The present law against the carrying of concealed weapons is strong enough and the penalty great enough to prevent that dangerous habit, if the officers do their duty, and where they do not do their duty the people have themselves to blame.

Another writer makes the point that the passage of the law will in some cases hinder the cause of justice in making it practically impossible to trace the purchase of a weapon when bought outside the Commonwealth, a crime not infrequently being brought home to the guilty party through identification by the local merchant who sold the murderous gun.

One method which has been suggested for evading the law is as follows: Instead of selling a Pistol to a customer, the dealer rents or leases it to him for a stated rental, say, about \$1 a week. The customer is required to deposit a sum equivalent to the value of the Pistol. If he fails to return it the dealer is satisfied to let him keep it. If he wants to return it, the dealer deducts the rent due from the customer's deposit and returns him the balance. Thus it is pointed out no sale is made and the merchant is not obliged to pay the tax.

It is understood that the officers of the State Retail Hardware Association are thinking of testing the constitutionality of the law, but up to the present time nothing has been decided.

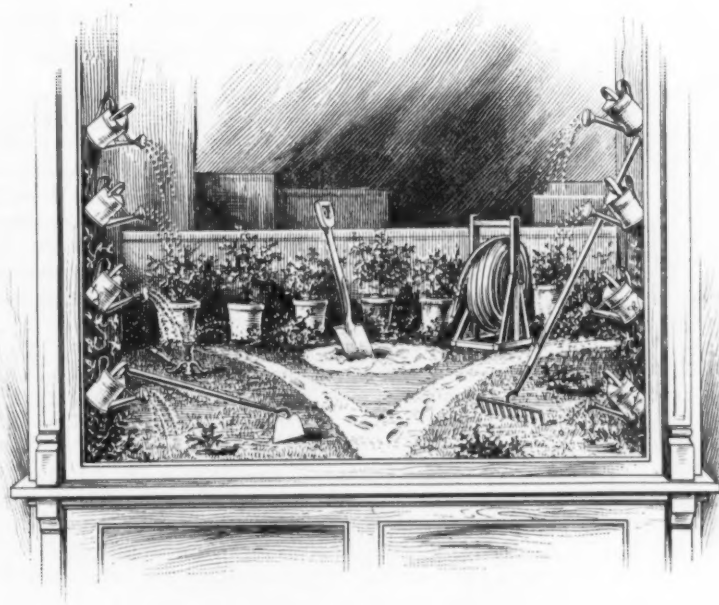
NELSON A. GLADDING, vice-president and manager of sales of E. C. Atkins & Co., Indianapolis, Ind., has started on his regular tour of inspection of the company's Western branches. He expects to be gone a month, and will stop in Chicago, Minneapolis, Omaha, San Francisco, Portland and Seattle.

Hardware Window Display

Seventeenth Article.

GARDENING IN THE SHOW WINDOW.

AN ingenious Hardware merchant will find it advantageous occasionally to do a little timely gardening in his show window. The word should be taken lit-



Gardening in the Show Window.

erally as a perfectly natural and realistic effect may be

A Realistic Effect.

secured by carrying out the following instructions. First cover the floor of the window with several thicknesses of heavy wrapping paper. This will protect the paint and woodwork. Over the wrapping paper sprinkle enough real earth to cover the whole floor of the window a few inches deep. Then comes the opportunity to show your talent as a landscape gardener. Form the earth into garden beds with paths between, so that you will experience no trouble in walking about to decorate the window further, and your footprints will add to the realism of the general effect. Rake over the beds you have made with a Garden Rake, so that the lines formed by the teeth are clearly visible on the surface of the earth, after which leave the Rake still sticking in the ground with the handle leaning against one side of the window as if the gardener had carelessly left it when going for his nooning. A Spade should be sticking up

Tools in Evidence.

out of the heap of earth in another adjacent bed. "The Man with the Hoe" is now popular, so be sure and place a Hoe and other Garden Tools on exhibition, as well as those already mentioned by way of illustration. Now set out your shrubbery. Small foliage plants may be used to represent bushes, scattered here and there, while larger plants in pots will form an excellent background at the rear of the window. Garden Hose and Lawn Sprinklers should also appear in the background, and as a finishing touch hang a line of Watering Pots up and down the window frame on both sides of the glass with their spouts

A Bright Idea.

pointing downward. Here is an opportunity to gain a novel and pleasing effect. Into these spouts and into the nozzle of the Lawn Sprinkler stick a number of short steel wires strung with tiny glass beads to imitate sprays of water. If the beads are small and glittering and the Wire is bright and bent in such a way as to indicate the natural course of the stream of water a highly satisfactory effect may be gained as indicated in the illustration.

REVOLVING GUN RACK FOR SHOW WINDOW.

As a solution of the vexed question of how to display Guns, Rifles and Revolvers to advantage in the window, at the same time economizing space, the show window Revolving Gun Rack, illustrated in Fig. 1, was evolved and perfected by D. K. Allen, Greenwich, Conn., aided not a little by suggestions from his salesmen. The rack is about 50 in. high, over all, the exposed wood work being all covered with green baize while the exposed pipe and floor plates are finished in aluminum bronze. The rack is exceedingly neat and attractive when loaded with the goods.

The Lower Section.

The drum, or lower section of the rack, shown in Fig. 2, was made of two $\frac{7}{8}$ -in. circular boards, 24 in. in diameter, fastened together all around with strips of wood 1 or $1\frac{1}{4}$ in. wide and 12 in. long. A hole was then bored in the center of the top board of the lower section with an expansive bit, $1\frac{3}{4}$ in. scant, just large enough to allow $1\frac{1}{2}$ in. wrought iron pipe to revolve in it without too much play.

The Upper Section.

Two other $\frac{7}{8}$ -in. circular boards, 26 in. in diameter, were used for the upper section or revolving part of the rack, one for the top and the other for the bottom. Fifteen holes, each about $1\frac{3}{4}$ in. in diameter, were bored at equal distances apart just inside of the circumference of the top board, through which the gun and rifle barrels project. A $1\frac{1}{2}$ -in. floor plate was fastened in the

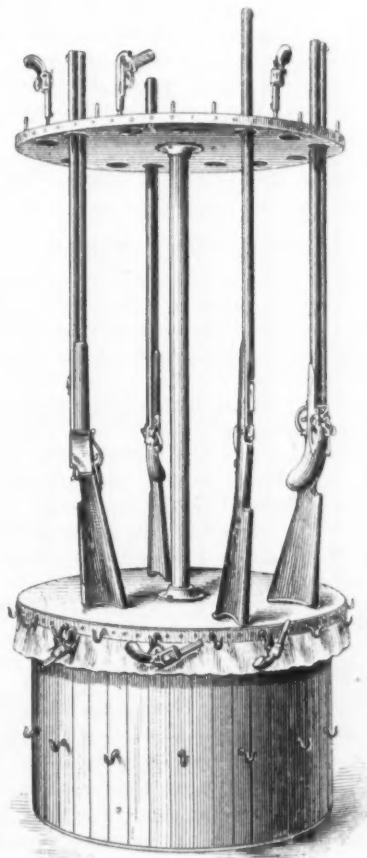


Fig. 1.—Show Window Revolving Gun Rack.

center of this board on the under side, and floor plates of the same size were fastened, one on the top, and the other on the bottom, at the center of the bottom board.

A piece of 1½-in. wrought iron pipe 34 in. long was threaded at both ends and screwed into the floor plate on the upper board and into one of the floor plates on the lower board. Another piece of pipe the same size and about 9 in. long threaded at one end, was screwed into the floor plate on the under side of the lower board.

Four Atme Ball Bearing Casters were fastened to the under side of the lower board about 2 in. back from the edge, at equal distances apart. A circular piece of metal was put on the upper side of the top board of the lower section for the Casters to run on to reduce friction. The two sections were thus separated a distance equal to the height of the Casters. As the circular boards of the upper section are 2 in. larger in diameter than those of the lower section, the board to which the Casters are attached projects 1 in. beyond the one on which the Casters

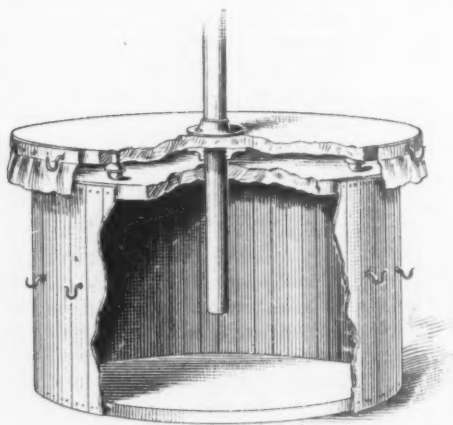


Fig. 2.—Detail of Lower Section of Revolving Gun Rack.

run. To conceal the Casters and the space between the two boards, a piece of baize about 4 in. wide was tacked with Brass Furniture Nails all around the edge of the bottom board of the upper section, after all the other baize was put on. This strip hangs like a valence, loose at the lower edge. The 9-in. length of pipe, which is screwed in the floor plate on the under side of the lower board of the upper section, passing through the hole in the upper board of the lower section, prevents the Casters running off the drum when the rack is revolved.

Location in Show Window.

The sash door opening into the show window is at the end nearest the front entrance to the store, and the rack is located on the floor of the window so as to be easily reached by salesmen when standing on the store floor. Thus the rack can be revolved and goods taken from it to show customers, without inconvenience. Fifteen Guns and Rifles can be accommodated on the rack. Brass Cup Hooks were screwed into the lower section, also on the lower board of the upper section, and on these Revolvers are hung. Pins driven into the top board of the upper section support Revolvers, the pins going up into the barrels. About three dozen Revolvers are thus accommodated on the rack.

AUSTRALIAN NOTES.

—FROM A SPECIAL CORRESPONDENT.

MELBOURNE, June 12, 1907.

THE trend of Australasia's trade continues unmistakably upward, both as regards volume and values. Country orders of late have been free, and builders' requisites are in especially good demand. In point of fact, there is something in the nature of a mild boom at present in the Australian building world.

Builders' Hardware is likely to continue in excellent demand for the next 12 months. After that period, however, indications are for a decided slump in this branch of the Hardware trade, since factories, office suites, dwelling houses, &c., are being run up out of proportion to the possible demand.

The Victorian Government is pursuing an active policy of closer settlement on the land, and this will have the effect of temporarily easing the labor market in the capital city and in the near future of increasing the country's productive power.

American representatives do not appear to be so numerous as usual during the past 12 months. Whether it is that the market is small for manufacturers or whatever the reason may be there is no doubt that English representatives outnumber them 10 to 1.

Aaron Danks, managing director of John Danks & Sons, Propy. Ltd., one of our leading Melbourne Hardware Houses, has presented the Melbourne Working Men's College with a cheque for £5,000 for endowment purposes.

A VERY interesting and superbly printed volume has lately been issued by the Pope Mfg. Company, Hartford, Conn., entitled "An Industrial Achievement." It is a record of the achievements of this company, a description of its personnel, the places in which its work is done, the manner in which it is done, the materials and methods used, and the character of the results obtained. The volume certainly presents an excellent idea of what the name Pope stands for in the production of Bicycles and Automobiles.

MISCELLANEOUS NOTES.

S. A. Smith Company.

S. A. Smith Company, Brattleboro, Vt., has just put on the market a hand propelled car for children, known as the Hi-Lo Flyer, having a change speed gear transmission and ball bearings with hardened steel balls. Cones and ball racer are used on rear axle and transmission shaft. Both rear wheels can be locked by a slight pull on lever. There is no dead center and the gears are always in full mesh, to make it impossible to strip the teeth. A safety clutch enables the operator to work the speed lever in any of the three positions, whether the car is in motion or not. The company's Norton's extension and convertible step ladder is adapted to uneven surfaces, has steps on both sides, and can be extended and a half section used as a regular ladder.

Keen Kutter and Chipaway Automobile Kits.

The Simmons Hardware Company, St. Louis, Mo., has been handling automobile kits for a year or more at its New York branch, filling them with tools of exceptional quality. The kits have proved quite a success, and an increasing demand for them is noted. The company is now adding and illustrating a very complete line of automobile supplies, feeling that a demand can be created for these goods.

The Milburn Dumping Wagon.

The Milburn Wagon Company, Toledo, Ohio, has recently engaged in the manufacture of bottom dumping wagons, in which one-half of the bottom draws to place first, without the use of a spring, and is provided with a wide steel plate to cover the joint between the two doors. When closed, the winding lever is thrown back, and locks itself, and both retaining dogs in contact with the ratchet wheel, so as not to be shaken loose. Both dogs are wrought steel, and are held in place by their own weight. To dump the load, the driver simply lifts and throws over one dog, then throws the lever forward; the lower end of the lever lifts the retaining dog and releases the load. It is pointed out that it is impossible for either dog to engage the ratchet wheel and cause trouble. One end of the chain only is wound, and it is wound on a cone shaped spiral grooved spool, winding rapidly at the start and slowly at the finish, enabling the driver to close the doors tightly, no matter if the chain does stretch some. All metal parts are wrought steel, except the ratchet wheel, winding spool and two small rollers, and if broken can be easily and cheaply repaired by any blacksmith. The wheel base is short to make a light draft wagon.

Simonds Straight Cut Hack Saw Frames.

The Simonds Mfg. Company, Fitchburg, Mass., and 40 Murray street, New York, manufacturer of saws for power and hand use in great variety, has just put on the



Fig. 1.—Simonds Solid Back Hack Saw Frame.

market under the registered trademark, Simonds, the Simonds straight cut hack saw frames here illustrated. Fig. 1 shows the solid back style, No. 39, for 8-in. blade. It is made of heavy gauge steel, polished and nicked. Fig. 2 reproduces the adjustable frame, No. 41, for blades 8 to 12 in. long, which is similar in construction. The peculiar feature of these frames is the style of handle, the firm grip afforded and the ease with which the work can be

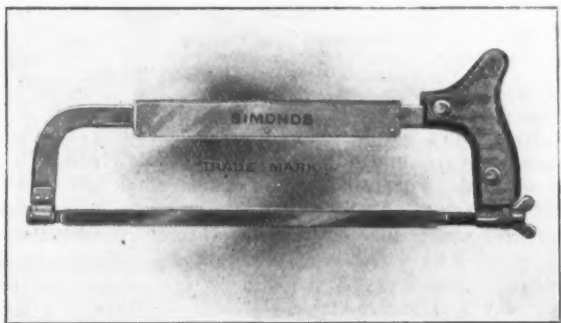


Fig. 2.—Simonds Adjustable Hack Saw Frame.

done as well as the straighter cut possible. The handles are of apple wood, and the saw screws of brass, similar to the company's mountings on its other high grade hand saws of various styles and kinds. These frames can be used with the regular back saw blades, or with its latest hack saw blade, with flexible back and straw color temper, which will successfully withstand hard usage.

The Arrow Garbage Pail.

The Arrow Can Company, 35 Warren street, New York, has just put on the market a modification of its



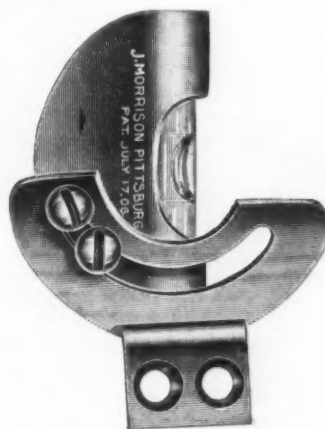
The Arrow Garbage Pail.

Arrow ash can, particularly designed to withstand the hard usage a garbage pail is subjected to, although it can be used for many purposes. It is numbered 12, and is

12 x 12 in. in dimensions, with outside cover having a beaded edge. The body, of one piece of heavy gauge steel, has 10 flutes, inside of which are strong steel rods run through holes in solid top and bottom formed in a die, and thoroughly riveted, thereby making it almost impossible to pull the top and bottom apart. The can has a heavy wire bail, held in thick gauge steel ears riveted securely top and bottom. The can is galvanized after manufacture, the bottom seam soldered in addition and made entirely water tight, and is offered for the severest duty in both public and private buildings.

Morrison's Plumb and Level.

The illustration herewith represents a plumb and level offered by the Morrison Mfg. Company, 2409 Forbes street, Pittsburgh, Pa. The tool is shown full size and in use as a plumb, but by swinging the movable part into a horizontal position it becomes a level. The tool can be



Morrison's Plumb and Level.

readily carried by a mechanic in his vest pocket, and can be used on any straight edge plumb rule level or bevel made of wood. It is easily placed in position with two wood screws which accompany each tool. Adjusting the device is accomplished by loosening the brass screws, shown in the cut, and tightening them again when the adjustment is made.

Sponge and Soap Holder and Coat and Hat Hook.

The Novelty Mfg. Company, Waterbury, Conn., is offering the trade the combination tub sponge and soap holder shown in Fig. 1. The sponge holder is made of heavy solid brass wire, and the soap dish of heavy sheet brass, and is 5 in. long and 3½ in. wide. The dish contains



Fig. 1.—Combination Tub Sponge and Soap Holder.



Fig. 2.—Solid Brass Coat and Hat Hook.

a drainer, and the whole piece is heavily nicked and highly finished. Another new piece is a solid cast brass coat and hat hook, illustrated in Fig. 2. It is made all on one piece, is heavily nicked, highly polished and very strong.

Acme Automatic Ash Sifter.

The Acme automatic ash sifter here shown is offered by the Acme Ball Bearing Sales Company, 56 Warren street, New York. It is designed to separate ashes, cinders and unconsumed coal automatically, and is said to enable the user to save a considerable percentage on his coal bills. The sifter is made of heavy galvanized iron, with all parts securely riveted. It is declared that there



Fig. 1.—Acme Automatic Ash Sifter with Ash Receptacle.

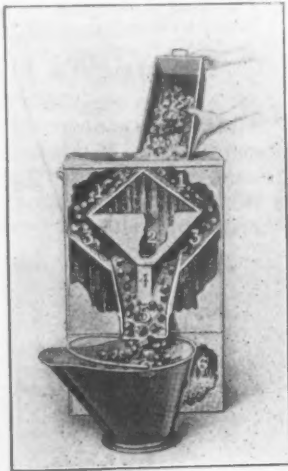


Fig. 2.—Broken Away View of Sifter, Showing Interior Construction and Method of Operation.

is nothing to bend, break or get out of order, and that no cleaning or other attention is necessary to insure proper operation. The screens may be easily removed and changed. A detachable base or ash receptacle is furnished, or the sifter may be fitted to the top of any ash can or barrel. Fig. 1 shows the device in operation, while Fig. 2 is a broken away view indicating the interior construction and the course of the ashes through the sifter. Referring to this illustration, 1 1 indicates the upper sieve, 2 the first ash collector, 3 3 the lower sieve, 4 the outlet from the first ash collector to the ash

receptacle below, 5 the outlet for cleaned coal and cinders and 6 the dustproof ash receptacle forming the base. From this view it will be understood that the ashes are poured into the hopper at the top of the sifter, running slowly over the inverted sieves by their own weight, where they are automatically separated and cleaned. The ashes fall into the dustproof receptacle at the bottom, while the coal and clean cinders run out into the hod. It is claimed for the device that it enables the user to do what is usually a dirty, disagreeable and laborious household job, without labor and with a minimum of annoyance and dirt.

The Vrooman Sink Strainer with Hook.

A new feature in connection with the Vrooman sink strainer, manufactured by the Andrews Wire & Iron Works, Rockford, Ill., is the hook shown in the accompanying cut. The hook is designed to hold the strainer



The Vrooman Sink Strainer with Hook.

in the corner of roll rim sinks by bending the hook around the rim and unhooking it when the strainer is to be emptied. For use in wood frame sinks the hook is easily detached. The strainer is now made in two sizes, and each size is furnished in five different finishes: plain tin, japanned tin and in three different colors of vitreous enamel. The large size strainers are packed $\frac{1}{4}$ gross in a box and the small size 1 gross in a box. A large three-colored show card is packed in each box for display in the store.

Bartholomew's Quick Detachable Pump Cylinder.

The Barnes Mfg. Company, Mansfield, Ohio, is manufacturing the quick detachable pump cylinder shown in the accompanying illustrations. The construction of the cylinder is such that it is unnecessary to disconnect the pump or send it to a shop or employ a mechanic for repairs. Fig. 2 shows the cylinder taken out for repairs. This is accomplished by inserting a small piece of iron in one of the four $\frac{5}{8}$ -in. holes provided for this purpose in the top cap and turning the cap to the right until it clears the cylinder shell. When this is done the shell or body can be removed. The cylinder is put together by the same operation, except that the top cap is turned to the left. Fig. 1 shows the cylinder replaced ready to tighten down the cap. The company makes the point that the cylinder is admirably adapted for sale by the hardware trade, as it will not give merchants any trouble after it is sold to customers, being easily repaired by any one without sending for an experienced pump man.

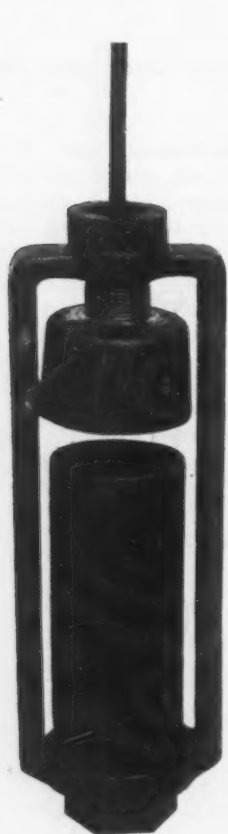


Fig. 1.—Bartholomew's Quick Detachable Pump Cylinder.



Fig. 2.—Bartholomew's Cylinder Taken Out for Repairs.

Stevens Check Hook and Cross Bolt.

The J. Stevens Arms & Tool Company, Chicopee Falls, Mass., has improved the construction and mechanism of its Nos. 250, 260, 270 and 280 hammer models and Nos.



Fig. 1.—Stevens Check Hook and Cross Bolt.

350, 360, 370 and 380 hammerless styles of guns, as shown herewith, by the use of a new system, which permits the use of the heaviest charges of powder. The hammerless gun No. 370 is illustrated in Fig. 1. In Fig. 2 is shown

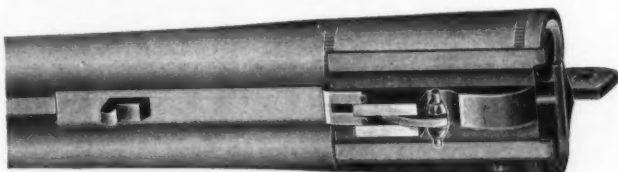


Fig. 2.—Detail of Check Hook and Extension Rib.

the new style check hook, also the extra long extension rib. The check hook is designed to relieve all strain on the forearm and joint. The position of the cross bolt and the slot in the frame that engages the check hook are

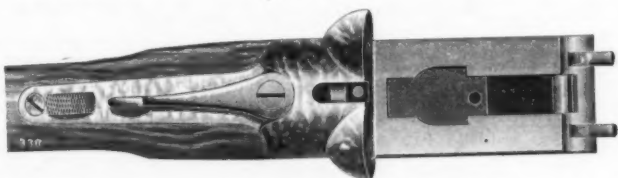
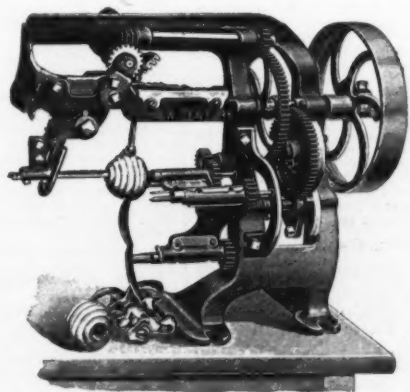


Fig. 3.—Detail of Cross Bolt and Slot in Frame.

illustrated in Fig. 2. The cross bolt through the extension rib is of the rotary compensating style, and is adjusted so as to take up all wear and prevent the gun shooting loose.

New Century Power Apple Parer and Corer.

The Goodell Company, Antrim, N. H., New York office 10 Warren street, is offering the power apple parer and



The New Century Power Apple Parer and Corer.

corer shown herewith. The frame is cast in one piece, which gives a rigid body upon which to hang the working parts of the machine, and with ordinary care, the

company remarks, should last for years. The adjustments are easy and quickly made, the machine paring an apple whole, including the ends, with comparatively little attention. The amount of work that can be done depends upon the quality of the fruit and the skill of the operator. Under average conditions, it is explained, about 30 apples per minute should be pared, or pared and cored, as desired. The parer is adapted for use in bakeries, mincemeat factories, as well as in hotels and restaurants.

Improved Vise for Woodworkers.

A new woodworkers' vise put on the market by the Pittsburgh Automatic Vise & Tool Company, Pittsburgh, Pa., is shown herewith. The tool, although capable of being swiveled in any direction, can be used in two entirely different positions and for various purposes. In its upright position, Fig. 1, it is advantageous for working on anything requiring a deep jaw, such as window frames or other high work. By lifting up the body of the

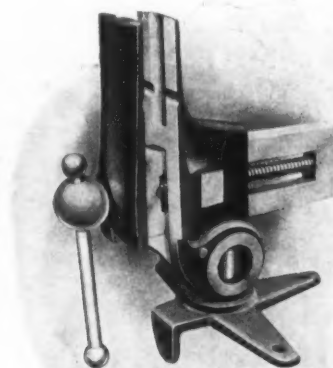


Fig. 1.—Improved Vise for Woodworkers.

vise over the mandrel support it can be laid upon its side, the inner jaw being perfectly even and flush with the edge of the bench, as in Fig. 2. In this position it is adapted for holding work that is to be planed and which requires to be held close to the surface of the table. Work which rests upon the floor, such as doors, for instance, can be held rigidly by means of this vise. Means are also provided for advantageously holding such shapes as posts, spokes and other round work, this being accomplished by grooves in the jaws traversing both faces. Thus no matter in what position the jaws may be the operator can readily hold his work. By reason of the construction of one of the legs or supports of the device

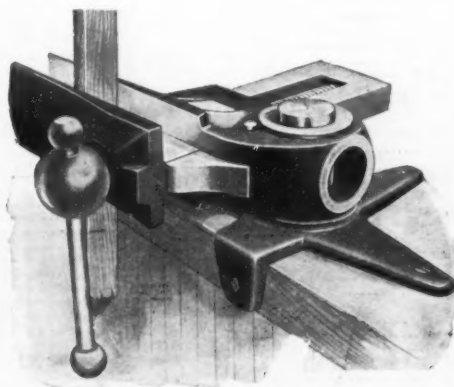


Fig. 2.—Vise in Horizontal Position.

the inner jaw is at all times perfectly parallel and flush with the edge of the bench. This leg or support is bent at right angles to the bottom of the base, which naturally has to fit over the edge of the bench. The base of the device can be permanently attached to a flat movable sup-

port. The body of the vise can be placed in the tool kit and when the carpenter reaches his job the body of the vise is slipped over the base and the tool is ready for holding any work which may be required. The swivels lock automatically by the tightening of the jaws upon the piece held, this locking being accomplished by friction, thus doing away with levers, springs, pins, &c.

Elgin National Coffee Mills.

The Woodruff & Edwards Company, Elgin, Ill., has put on the market a new line of coffee mills, three styles



Fig. 1.—Elgin National Floor Mill No. 31.

of which are shown herewith. The mills are referred to as being of the highest standard of excellence, strong, and grinding rapidly and uniformly. The burrs are of steel.

The mills are fitted with a special adjuster for regulating the grinding, fine or coarse, while the mill is running. The larger mills of the line are painted to suit customers, either red or wine color, handsomely decorated with gold bronze and tube colors. The smaller mills are finished in red and gold. The mill shown in Fig. 1 has a nickel hopper which holds 9 lb. of coffee and will grind 3 lb. per minute. The mill is 69 in. high, with wheels 33 in. in diameter. The nickel hopper mill illustrated in Fig. 2 holds 2½ lb. of coffee and grinds 1 lb. of coffee per min-

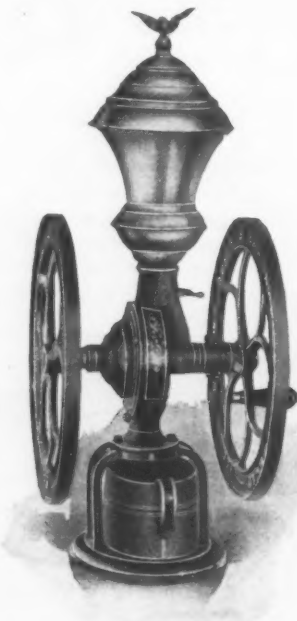


Fig. 2.—Elgin National Coffee Mill No. 45.

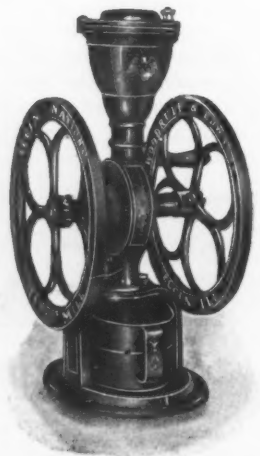


Fig. 3.—Elgin National Coffee Mill Nos. 48 and 49.

ute. It stands 28 in. high, with wheels 15 in. in diameter. A mill designed for use in small hotels and restaurants is shown in Fig. 3. No. 48 mill has an iron hopper which holds 1 lb., and No. 49 mill has a nickel hopper holding 1½ lb. of coffee. Either style grinds ½ lb. of coffee per minute. The mill with iron hopper is 21 in. high, and the nickel hopper mill is 2 in. higher. The wheels of both mills are 11½ in. in diameter.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	gal.	per gal.
Linseed, City, raw.....	45	@46
City, Boiled.....	46	@47
State and Western, raw.....	40	@41
Raw, Calcutta, in bbls.....	70	@71
Lard, Extra Prime, Winter.....	75	@77
Extra No. 1.....	53	@55
No. 1.....	49	@52
Cotton-seed, Crude, f.o.b. mills.....	@	@55½
Summer Yellow, Prime.....	@59	@59
Summer White.....	@59	@59
Yellow Winter.....	@59	@59
Sperm, Crude.....	59	@60
Natural Winter.....	72	@73
Bleached Winter.....	75	@76
Bleached Winter, Extra.....	@	@76
Tallow, Prime.....	60	@61
Whale, Crude.....	35	@36
Natural Winter.....	48	@49
Bleached Winter.....	50	@51
Extra Bleached Winter.....	52	@53
Menhaden, Brown, Strained.....	32	@33
Light Strained.....	32	@33
Northern.....	@	@34
Southern.....	@	@34
Cocanut, Ceylon.....	10	@10½
Cochin.....	10	@10½
Cod, Domestic, Prime.....	36	@37
Newfoundland.....	40	@42
Red, Elaine.....	47	@48
Saponified.....	7	@7½
Olive, Italian, bbls, Yellow.....	65	@67
Nestfoot, Prime.....	56	@57
Palm, Logos.....	7	@7½

Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	12½	@13
29 gravity, 15 cold test.....	13	@13½
Summer.....	12	@12½
Cylinder, light filtered.....	19	@20
Dark, filtered.....	14½	@15½
raffine, 903-907 gravity.....	14	@14½
85 gravity.....	13	@13½
883 gravity.....	10½	@11½
Red.....	13	@14½

Miscellaneous—

Barytes:		
White, Foreign.....	ton	\$18.50@20.50
Amer. floated.....	ton	19.00@20.00
Off color.....	ton	13.00@16.50
Chalk, in bulk.....	ton	3.00@3.25
In bbls.....	100 lb.	@35
China Clay, Imported.....	ton	11.00@17.50
Cobalt, Oxide.....	100 lb.	2.50@2.60
Whiting, Commercial.....	100 lb.	.43@.52
Gilders.....	100 lb.	.55@.65
Ex. Gilders.....	100 lb.	.60@.65
Putty, Commercial.....	100 lb.	@1.00
In bladders.....	1.70	@1.85
In bbls. or tubs.....	1.20	@1.45
In 1 lb to 5 lb cans.....	2.65	@2.95
In 12½ to 50 lb cans.....	1.50	@1.90
Spirits Turpentine.....	gal.	@58½
In Oil bbls.....	58	@58½
In machine bbls.....	58½	@59
Glue—		
Cabinet.....	12	@15
Common Bone.....	7½	@9
Extra White.....	18	@24
Foot Stock, White.....	12	@14
Foot Stock, Brown.....	9	@11
German Hide.....	12	@18
French.....	10	@40
Irish.....	13	@16
Low Grade.....	10	@12
Medium White.....	11	@17
Gum Shellac—		
Bleached, Commercial.....	44	@45
Bone Dry.....	53	@54
Button.....	40	@50
Diamond.....	58	@59
Fine Orange.....	52	@57
A. C. Garnet.....	45	@46
Kala Button.....	35	@36
D. C.....	62	@63
Octagon B.....	56	@57
T. N.....	73	@74
V. S. O.....	58	@59
Colors in Oil—		
Black, Lampblack.....	12	@14
Blue, Chinese.....	36	@46
Blue, Prussian.....	32	@36

Blue, Ultramarine.....	13	@15
Brown, Vandyke.....	11	@14
Green, Chrome.....	12	@16
Green, Paris.....	21	@21
Sienna, Raw.....	12	@15
Sienna, Burnt.....	12	@15
Umber, Raw.....	11	@14
Umber, Burnt.....	11	@14

White Lead, Zinc, &c.—

Lead, English white, in Oil.....	10½	@10½
Lead, American White:		
Lots of 500 lb or over, in Oil.....	@7½	
Lots less than 500 lb, in Oil.....	@8	
Lead, White, in oil, 25 lb tin		
pails, add to keg price.....	@½	
Lead, White, in oil, 12½ lb tin		
pails, add to keg price.....	@1	
Lead, White, in oil, 1 to 5 lb		
ass'ted tins, add to keg price.....	@1½	
Lead, American, Terms: For lots 12		
tons and over ¼¢ rebate; and 2% for		
cash if paid in 15 days from date of		
invoice; for lots of 500 lbs, and over		
2% for cash if paid in 15 days from		
date of invoice, for lots of less than		
500 lbs. net.....	5½	@5½
Zinc, American, dry.....	5½	@5½
Zinc, French:		
Antwerp, Red Seal, dry.....	5½	
Antwerp, Green Seal, dry.....	10½	
Paris, Red Seal, dry.....	9½	
Paris, Green Seal, dry.....	11	
Zinc, V. M. French, in Poppy Oil:		
Green Seal:		
Lots of 1 ton and over.....	13½	@13½
Lots of less than 1 ton.....	13½	@13½
Zinc, V. M. French, in Poppy Oil:		
Red Seal:		
Lots of 1 ton and over.....	11½	@12½
Lots of less than 1 ton.....	12½	@12½
Discounts.—French Zinc.—Discounts		
to buyers of 10 bbl. lots of one or mixed		
grades. 1%: 25 bbls., 2%: 50 bbls., 4%:		
Dry Colors—		
Black, Carbon.....	6½	@10
Black Drop, American.....	3½	@8
Black Drop, English.....	5	@15

Black, Ivory.....	16	@20
Lamp, commercial.....	4	@6
Blue, Celestial.....	4	@6
Blue, Chinese.....	30	@33
Blue, Prussian.....	28	@32
Blue, Ultramarine.....	3½	@15
Brown, Spanish.....	11	@14
Carmine, No. 40.....	3.10	@3.25
Green, Chrome, ordinary.....	3¼	@7
Green, Chrome, pure.....	17	@25
Lead, Red, bbls., ½ bbls., kegs.....	@7½	
Litharge, bbls., ½ bbls., kegs.....	@7½	
Ocher, American.....	ton	\$3.50@16.00
American Golden.....	2½	@3¼
French.....	14½	@2
Foreign Golden.....	3	@4
Orange Mineral, English.....	10	@12
French.....	11½	@12
German.....	10	@12
American.....	8½	@9
Red, Indian, English.....	4½	@6
American.....	3	@3¼
Red, Turkey, English.....	4	@10
Red, Tuscan, English.....	7	@10
Red, Venetian, Amer.....	100 lb.	\$0.50@1.25
English.....	100 lb.	\$1.15@1.60
Sienna, Italian, Burnt and		
Powdered.....	3	@9
Italian, Raw, Powdered.....	3	@7
American, Raw.....	14½	@2
American Burnt and Pow'd.....	14½	@2
Talc, French.....	ton	\$18.00@25.00
American.....	ton	15.00@25.00
Terra Alba, French.....	100 lb.	.90@1.00
English.....	100 lb.	.80@1.00
American.....	100 lb.	.75@.80
American.....	100 lb.	.60@.65
Umber, Tkev. Bnt. & Pow'd.....	2	@3¼
Turkey, Raw and Powdered.....	2¼	@3¼
Burnt, American.....	14½	@2
Raw, American.....	14½	@2
Yellow Chrome, Pure.....	12	@14
Vermilion, American Lead.....	7	@25
Quicksilver, bulk.....	65	@6
Quicksilver, bags.....	60	@6
English, Imported.....	65	@70
Chinese.....	\$0.90	@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33%
North.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.
Fernald Quick Shifter, doz. pairs \$2.00@3.00

Anvils—American—

Eagle Anvils.....@ 8%
Hay-Budden, Wrought.....@ 9%
Trenton.....@ 9%

Imported—

Peter Wright & Sons, lb. 84 to 349 lb. 11¢; 350 to 600 lb. 11½¢.

Anvil, Vise and Drill—

Millers Falls Co. \$18.00.....15&10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33%

Augers and Bits—

Conn. Double Spur.....70&10 @ 75%
Jennings' Patn., reg. Anvil.....60&5 @ 60&10

Black Lip or Blued—

Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10

Black Lip or Blued—

Ford's Auger and Car Bits.....40&10
Ft. Washington Auger Co. Concord's.....35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co. No. 10 ext. lip, R. Jennings' list.....25&10

Black Lip or Blued—

No. 30, R. Jennings' list.....25&10
Russell's.....25&10
L'Hoummedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....25%
Pugh's Jennings' Pattern.....30%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, \$18; large, \$20.....60&10%
Clark's Pattern, No. 1, doz. \$26; No. 2, \$18.....60&10%
Ford's, Clark's Pattern.....60&10%
C. E. Jennings & Co. Steer's Pat. 25%
Lavigne Pat., small size, \$15.00; large size, \$26.00.....60&10%
Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$6.50@7.00
Ames.....25&10%
Universal.....30%

Ship Augers and Bits—

Ship Augers.....40&10%
Ford's.....35&5%
C. E. Jennings & Co. L'Hoummedieu's.....6%
Watrous'.....35&7%
Snell's.....40%

Awl Hatts—See Handles, Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75@3.00
Unhanded, Shilded.....gro. \$2.50@2.75
Unhanded, Patent.....gro. \$2.00@2.25
Peg Awls:
Unhanded, Patent.....gro. \$1.31@1.41
Unhanded, Shilded.....gro. \$1.05@1.15
Scratch Awls:
Handled, Com.....gro. \$3.50@4.00
Handled, Socket.....gro. \$1.15@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.
First Quality.....\$1.75@5.00
Second Quality.....\$1.25@4.50

Double Bit, base weights:

First Quality.....\$1.00@7.50
Second Quality.....\$0.50@6.75

Axle Grease—

See Grease, Axle

Axles—

Iron or Steel

Concord, Loose Collar.....4½@5¢
Concord, Solid Collar.....4½@5¢
No. 1 Common, Loose.....3½@4¢
No. 1½ Common, New Styles.....4½@5¢
No. 2 Solid Collar.....3½@4¢
Half Patent.....70@75%
Nos. 7, 8, 11 and 12.....70@75%
Nos. 13 to 14.....70@75%
Nos. 15 to 18.....75@75&5%
Nos. 19 to 22.....75@75&5%

Boxes, Axle—

Common and Concord, not turned lb., 4½@5¢
Common and Concord, turned lb., 5½@6¢
Half Patent.....lb., 9½@10¢

Bait—

Fishing—

Heudryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—

Sash—

Caldwell new list.....50%
Fullman.....50&10@60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Sps. Balances.....50&50@10%
Straight Balances.....40&40@10%
Circular Balances.....50&10%
Large Dial.....30%
Barb Wire—See Wire, Barb.

Bars—

Crow—

Steel Crowbars, 10 to 40 lb. per lb., 2½@3¢

Towel

No. 10 Ideal, Nickel Plate.....\$1.50

Beams, Scale—

Scale Beams.....40%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered doz. \$0.80; Tinned.....\$0.85
No. 11 Wire Coppered doz. \$1.15; Tinned.....\$1.20
No. 10 Wire Tinned.....\$1.20
Western W. G. Co.:
No. 1 Electric.....\$7.80
No. 2 Buffalo.....\$9.00
No. 3 Perfection Dust.....\$9.00

Beaters, Egg—

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, \$0.80; No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.55; No. 6, Jap'd, \$1.65.
Lyon, Jap'd, per doz., No. 2, \$1.35.
Taplin Mfg. Co.:
Improved Dover, per gro. No. 60, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel Tin'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd, \$9.50; No. 300, Mammoth, per doz., \$25.00.
Tanner & Seymour Mfg. Co.:
T. & S. Dover.....\$6.50
Western W. G. Co., per gro., Buffalo, No. 2, \$8.00; Perfection, No. 3, \$9.00.
Wonder (R. M. Co.).....per gro. net, \$8.40

Bellows—

Blacksmith, Standard List:
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—

Inch.....6 7 8 9 10
Doz. \$5.00 5.50 6.00 6.50 7.50

Molders—

Inch.....10 12 14 16
Doz. \$7.50 9.00 12.00 15.00

Bells—

Cow—

Ordinary Goods.....75&5@75&10&5%
High grade.....70&10@75%
Jersey.....75&10%
Texas Star.....50%

Door—

Barton Gong.....35&40%
Home, R. & E. Mfg. Co.'s.....55&10%

Hand—

Polished, Brass.....50@50&10%
White Metal.....50@50&5%
Nickel Plated.....40&10@50%
Swiss.....50&10@50&10&5%
Cone's Globe Hand Bells.....33%@35%

Miscellaneous—

Farm Bells.....lb., 2½@2½¢
Church and School.....60@60&5%

Belting—

Leather—

Extra Heavy, Short Lap.....60&5%
Regular Short Lap.....60&10&5%
Standard.....70&5%
Light Standard.....75%
Cut Leather Lacing.....40&5%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Agricultural (Low Grade).....75@75&5%
Common Standard.....70&70&10%
Standard.....70&70&5%
Extra.....60&50@60&10%
High Grade.....50&50@50&10%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$1.25; No. 2, \$1.25; No. 3, \$1.50; No. 4, \$1.25; No. 5, \$2.50.
Green River Tire Benders and Upsetters.....20%

Bicycle Goods—

John S. Leug's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks—

Tackle—

Common Wooden.....75%
B. & L. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50%
Stowell's Loading.....50&10%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....40%
Embossed.....50%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....33&45%

Boils—

Carriage, Machine, &c.—

Common Carriage (cut thread):
¾ x 6 and smaller.....70&5@—%
Larger and Longer.....60&2½@—%
Phila. Eagle \$3.00 list May 21, '09

Bolt Ends—

Machine (cut thread):
¾ x 4 and smaller.....70&7½@—%
Larger and longer.....60&7½@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....3 4 5 6 8
Per doz. \$1.30 .35 .45 .60 .80
Cast Iron Spring Foot, Jap'd:
Inch.....6 8 10
Per doz.....\$1.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:
Inch.....6 8 10
Per doz.....\$1.00 1.40 1.65
Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....6 8 10
Per doz.....\$0.75 .95 1.25
Wrought Barrel Jap'd. 80@80&10%
Barrel Bronzed.....60&10%
Spring.....70&10@70&10&5%
Shutter.....50&50@50&10&5%
Square Neck.....75&75&10%
Square.....70&70&10%
Ives' Patent Door.....35%
Ives' Wrought Metal.....45%

Expansion—

Richards Mfg. Co.....50&10%

Plow and Stove—

Plow.....65&5@—%
Stove.....85@85&5%

Fire—

Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82½%
Eclipse, list Dec. 23, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82½%
Mount Carmel, list Dec. 23, '99.....80%
Russell, Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 23, '99.....80%
Norway Phila., list Oct. 16, '84.....80%
Eagle.....82½%
Shelton Co.:
Tiger Brand, list Dec. 23, '99.....80%
Phila., Eagle, list Oct. 16, 1881.....82½%
Upon Nut Co.:
Tire Bolts.....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:
Inch.....1¼ 1½ 1¾ 2
Per doz.....\$1.80 5.60 6.40 8.00
Inch.....2½ 3
Per doz.....\$5.65 11.50
Enterprise Mfg. Co. No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Impr. ved, 20&10%; Langdon Acme.....15%
Perfection.....40%
Seavey.....45%

Braces—

Common Ball, American.....\$1.50
Harber's.....50&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 411.....60%
C. E. Jennings & Co.....50&5%
Mayhew's Catcher.....60%
Mayhew's Quick Action Hay Pat. 50%
Millers Falls Drill Braces.....25&10%
P. S. & W. Co., Peck's Pat. 60&10%

Brackets—

Wrought Steel.....70&10@75&10%
Bradley Metal Clasp, 80&10@80&10&5%
Griffin's Pressed Steel.....75&75&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf, 50%; Sink.....50%
Western W. G. Co. Wire.....60&10%
Taplin Victor Handy Egg Bender Bracket.....per doz. \$1.50

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75&20%
Western W. G. Co.....80%
Wire Goods Co.....75%

Buckets, Galvanized—

Mfg'r's list, price per gross.
Quart. 10 12 14
Water, Reg.....25.35 28.00 32.00
Water, Hvy.....45.55 48.00 52.00
Fire, Rd. Htm. 32.00 34.65 38.65
Well.....37.55 41.95 45.35

Bucks, Saw—

Hoosier.....per doz. \$3.00@36.00

Bull Rings—See Rings, Bull

Butts—

Brass—

Wrought, High List, Oct. 26, '06.
45@45&10%

Cast Iron—

Fast Joint, Broad.....40&10@50%
Fast Joint, Narrow.....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70&70&5%
Parliament Butts.....70&70&5%
Wrought Steel—

Discount

Reversible and Broad.....70&5%
Light Reversible, Light Narrow.....70&5%
Loose Joint, Narrow, Light Inside Blind, etc.....70%
Back Flaps, Table Chest.....65%

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list: 1200, 15%; 200, 300, 900.....30%

Hendryx Bronze, Series 700, 800, 30%
Hendryx Enamelled.....35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per lb., 4 1/4¢
Sharp, 1 prong, per lb., 4 1/2¢
Burke's, Blunt 4 1/4¢; Sharp, 4 1/2¢
Lautier, Blunt, 4 1/4¢; Sharp, 4 1/2¢
Perkins', Blunt, 4 1/2¢; Sharp, 4 1/2¢

Can Openers—

See Opners, Can.

Cans, Milk—

	5	8	10 gal.
Illinois Pattern.....	\$1.85	2.00	2.15
New York Pattern.....	2.15	2.40	2.65
Dubuque.....	1.85	2.00	2.15

Cans, Oil—

R. M. Co., Family, 1/2 gro.:
Empire.....\$21.00 \$33.00 \$56.00
Buffalo.....\$21.00 \$33.00 \$56.00

Caps, Percussion—

Eley's E. B.....50¢
U. D.....per M 34¢
F. L.....per M 40¢
U. E.....per M 48¢
Musket.....per M 62¢

Primers—

Berdan Primers, \$2 per M.....20¢
Primer Shells and Bullets.....15¢
All other primers per M \$1.52¢

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Blank Cartridges:
32 C. F., \$5.50.....10¢
38 C. F., \$7.00.....10¢
22 cal. Rim, \$1.50.....10¢
32 cal. Rim, \$2.75.....10¢
B. B. Caps, Con. Ball, Sigd. \$1.50
B. B. Caps, Round Ball.....\$1.49
Central Fire.....25¢
Target and Sporting Rifle.....15¢
Primer Shells and Bullets.....15¢
Rim Fire, Sporting.....50¢
Rim Fire, Military.....15¢

Castors—

Bed.....65¢
Plate.....65¢
Philadelphia.....70¢
Acme Ball Bearings.....35¢
Boss Anti-Friction.....70¢
Gem (Roller Bearing).....70¢
Steel Gem.....20¢
Martin's Patent (Phoenix).....40¢
Standard Ball Bearing.....45¢
Tucker's Patent low list.....30¢
Yale (Double Wheel) low list.....40¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
5-16 1/4 5-16 3/4 7-16 1/2 9-16
\$8.77 6.17 5.02 4.57 4.27 4.22
\$3.7 4.07 4.02 4.12
In cash lots, deduct 25¢.
German Coil.....60¢ to 10¢ to 70¢

Halter—

Halter Chains.....60¢ to 65¢
German Pattern Halter Chains,
list July 24, '97.....60¢ to 65¢
Covert Mfg. Co.....35¢

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/2-6-3, Straight, with ring, \$28.00
6 1/2-6-2, Straight, with ring, \$29.00
6 1/2-8-2, Straight, with ring, \$32.00
6 1/2-10-2, Straight, with ring, \$37.00
NOTE—Add 2c per pair for Hooks.
Twist Traces: add per pair for Nos 2
and 3, 2c; No. 1, 3c; No. 0, 4c to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c.....60¢

Miscellaneous—

Jack Chain, list July 10, '95:
Iron.....60¢ to 10¢
Brass.....50¢ to 10¢
Safety and Plumbers' Chain,
60¢ to 10¢
Gal. Pump Chain.....1/2 lb. 4 1/2¢
Covert July 10, '95:
Breast, Halter, Heel, Rein, Stal-
lion.....40¢
Onoda Community:
American Halter, Dog and Kennel
Chains.....35¢ to 40¢
Niagara Dog Leads and Kennel
Chains.....45¢ to 50¢
Wire Goods Co.:
Dog Chain.....70¢
Universal Dbl.-Jointed Chain.....50¢

Chain and Ribbon, Sash—

Onoda Community:
Steel Chain.....60¢
Fullman:
Bronze Chain, 60%; Steel Chain,
60¢ to 10¢
Sash Chain Attachments, per set, 8¢
Aluminum Sash Ribbon, per 100
ft., \$1.25 to \$3.00
Sash Ribbon Attachments, per set, 8¢

Chalk—(From Jobbers.)

Carpenters' Blue.....\$0.05 to 55¢
Carpenters' Red.....\$0.05 to 55¢
Carpenters' White.....\$0.05 to 55¢

Checks, Door—

Bardsley's.....45¢
Fullman, per gro.....\$50.00
Russwin.....33 1/4%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....50%
Youths' Chests, with Tools.....25%
Gentlemen's Chests, with Tools.....25%
Farmers', Carpenters', etc., Chests,
with Tools.....25%
Machinists' and Pipe Fitter's
Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists'
Tool Chests.....75%

Chisels—

Socket Framing and Firmer
Standard List.....70¢ to 10¢ to 75¢
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25¢ to 75¢
Socket Framing No. 15.....25¢ to 75¢
Swan's.....25%
L. & I. J. White Co.....30¢ to 30¢ to 5%

Tanged—

Tanged Firmers.....30¢ to 35¢
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181, 25%
L. & I. J. White Co.....30¢ to 30¢ to 5%

Cold—

Cold Chisels, good quality, 15¢ to 15¢
Cold Chisels, fair quality, 11¢ to 11¢
Cold Chisels, ordinary, 9¢ to 10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beauchamp's, each \$5.00.....25%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Hart's Positive Drive.....25%
Independent Lathe Chucks.....35%
Universal, Reversible Jaws.....35%
Combination, Reversible Jaws.....35%
Drill Chucks, New Model, 25%:
Standard, 45%; Skinner Pat., 40%
25%; Positive Drive.....40%
Planer Chucks.....20%
Face Plate Jaws.....35%
Standard Tool Co.....45%
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40%; No. 21.....35%
Scroll Combination, Nos. 83 and
84.....35%
Gears, Scroll, Nos. 34 and 35.....35%
Independent Iron, Nos. 18 and 318, 35%
Independent Steel, No. 61.....25%
Union Drill, Nos. 000, 00, 100, 101,
102, 103, 104.....35%
Union Gear Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15.....35%
Universal, No. 2.....35%
Iron Face Plate Jaws, Nos. 28, 30,
48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and
72.....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill.....50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers.....20¢ to 25¢
Orange Makers', P., 4 W.....50%
Co., 50%
Besly, Parallel.....33 1/3%
Myers' Hay Rack.....45%
Linenman's Swedish Neverturn.....45%
Wood Workers, Hammers.....40%
Saw Clamps, see Vises, Saw Filers.

Cleaners, Drain—

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

Sidewalk—

Star Socket, All Steel, 3/4 doz. \$4.05 net
Star Shank, All Steel, 3/4 doz. \$3.24 net
W. & C. Shank, All Steel, 3/4 doz.,
7 1/2 in., \$3.00; 8 in., \$3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and

Sheep—
Chicago Flexible Shaft Company:
1902 Chicago Horse, each, \$10.75
20th Century Horse, each, \$5.00
Lightning Belt Horse, each, \$15.00
Chicago Belt Horse, each, \$20.00
Stewart's Enclosed Gear
Horse, each.....\$8.75
Stewart's Patent Sheep Shear-
ing Machine, each.....\$12.75
Stewart Enclosed Gear Shear-
ing Machi e, No. 8, each, \$9.75

Clips, Axle—

Regular Styles, list July 1, '05,
80¢ to 90¢ to 10%

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene,
Racking, Liquor, Rotting,
&c.....60¢ to 10¢ to 65¢
Compression Bibbs.....55¢ to 10¢ to 60%

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Son's list.....40%
Leather, Walter B. Stevens & Son's
list.....40%

Compasses, Dividers, &c.

Ordinary Goods.....70¢ to 10¢ to 75%
Wm. Schollhorn Co.:
Excelsior Dividers.....60%
Lodi Dividers.....70¢ to 10%

Conductor Pipe,—

L. C. L. to Dealers:
Galvanized
Steel. Charcoal Copper.
Iron. 14, 16¢ to 20¢ oz.
Eastern:
70% 50¢ to 17 1/2% 30%
Central:
65¢ to 10% 55¢ to 2 1/2% 20¢ to 10%
Western and Southern:
65¢ to 5% 50¢ to 7 1/2% 20¢ to 7 1/2%
So. Western
50¢ to 25¢ to 2 1/2% 50% 20¢ to 5%
Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

R. M. Co.:
Gal., ea. 2 3 4 6 8
Yukon.....\$1.25 \$1.50 \$2.00 \$2.25 \$2.50
Alaska.....\$2.25 \$2.50 \$3.00 \$4.00 \$5.00
L. & G. Mfg. Co.:
Gal.....2 3 4 6 8
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00
Galvanized, Lined, side handles,
Gal.....2 3 4 6 8
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enamelled.....10%
Agate Lined.....10%

Coopers' Tools—

See Tools, Coopers'.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
and heavier, 30¢ to 33¢; lighter
than 3 lb. to pair.....32¢ to 35¢

Cord—

Sash—
Braided, Drab.....1b. 55¢
Braided, White, Com., Nos. 8
to 12, 26¢; No. 7, 26 1/2¢; No. 6,
27 1/2¢.

Cable Laid Italian, lb., No. 18.....37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11¢ to 11 1/2¢
Cotton Sash Cord, Twisted, 18¢ to 20¢
Patent Russia.....lb., 20¢
Cable Laid Russia.....lb., 21¢
India Hemp, Br'd'd.....lb., 21¢
India Hemp, Twisted.....lb., 13¢ to 14¢
Patent India, Twisted.....lb., 17¢
Pearl Braided, cotton, No. 6, 30 lb.,
27 1/2¢; No. 7, 28 1/2¢; Nos. 8 to 12, 26¢
Edystone, Braided, Nos. 8 to 12,
26¢; 7, 26 1/2¢; 6, 27 1/2¢
Harvey Cable Laid Italian, Nos. 7
to 10.....lb. 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
Braided, lb., Drab Cotton,
55¢; Italian Hemp, 40¢ to 45¢
50¢; Linen, 65¢; White Cot-
ton, 50¢; Spot Cord.....50¢
Massachusetts, White.....lb. 45¢
Massachusetts, Drab.....lb. 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢;
B, Drab, 40¢; B, White, 35¢;
Italian Hemp, 40¢; Linen.....57 1/2¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906, 85¢ to 10¢ to 85¢ to 10¢ to 70%
Hendryx Standard Wire Picture Cord,
old list, 85¢ to 10%
Turner & Stanton Co. Wire Picture
Cord.....85¢ to 10%

Cradles—

Grain.....40¢ to 12 1/2%

Crayons—

White Round Crayons, Cases, 100
gro., \$6.50 to \$7.50 at factory, but
lower prices made by jobbers
Zelnicke's Lumber.....gro.
White and Purple, Indelible.....\$7.50
Blue, Red, Green, Yellow and
Terra Cotta, \$4.50; Black.....\$4.00
Giant Lumber, 5 1/4 in. x 15 1/2 in.,
round, all colors, \$16.25; Indeli-
bles.....\$18.75
Genuine Soapstone, Metal Workers',
5 in. x 1/4 in. Round, \$2.50; 5 in. x
1/4 in. Square, \$1.75; 5 in. x 1/4 x 3-16,
\$2.50; 5 in. x 1/4 x 3-16.....\$3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, \$5.50;
Light.....\$5.00

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1817, 1/2 doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor.....1/2 doz. \$3.00
Wm. Rogers & Son.....1/2 doz. \$2.50

Cutters—

H. H. Mayhew Co.....40%
Red Devil.....60%
R. Mfg. Co.....50%
Woodward.....50%

Meat and Food—

American.....401 402 403 404 405 406 407
Each.....\$5 \$7 \$10 \$12 \$25 \$50 \$60
Enterprise:
Nos. 5 10 12 22 32
Each.....\$2 \$3 \$2.75 \$1.50 \$6 \$25 to 25¢ to 7 1/2¢
No. 22, \$1.50.....40¢ to 7 1/2¢
P. S. & W. Co.:
Dixon's.....3/4 doz. 33 1/4%
Nos. 3 2 4
\$11.00 \$17.00 \$19.00 \$30.00
Ideal.....40¢ to 40¢ to 5%
Hales.....60¢ to 10¢ to 5%
Little Giant.....1/2 doz. 40¢ to 50%
Nos. 305 310 312 320 322
\$35.00 \$48.00 \$14.00 \$72.00 \$68.00
New Triumph No. 605, 1/2 doz. \$24.00,
40¢ to 10%
Russwin Food, No. 1, \$24.00, No. 2,
\$27.00.....45¢ to 10¢ to 10%
Enterprise Beef Shavers.....25¢ to 30%

Slaw and Kraut—

Henry Dutton & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....1/2 doz. \$3.00
Combined Slaw Cutter and Corn
Grater.....1/2 doz. \$4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....35¢ to 5%
Slaw Cutters, 1 Knife, 1/2 gr. \$18¢ to \$24¢
Slaw Cutters, 2 Knife, 1/2 gr. \$24¢ to \$40¢

Tobacco—

All Iron, Cheap.....doz. \$1.25 to \$1.50
Enterprise.....25¢ to 30%
National, 1/2 doz., No. 1, \$21; No. 2,
\$18.....40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, 1/2 doz., \$24.00.....25%
Samson, 1/2 doz., \$34.00.....25%
Iwan's Imp'd Post Hole Auger, 40%
Vaughan Pattern Post Hole Augers,
1/2 doz., \$7.00
Perfection Post Hole Diggers, 1/2
doz., \$4.75
Split Handle Post Hole Diggers,
1/2 doz., \$7.75
Hercules Pattern, 1/2 doz., \$10.00
Kohler's, 1/2 doz., Universal, \$15.00;
Little Giant, \$12.00; Hercules,
\$10.00; Invincible, \$9.00; Rival,
\$8.50; Pioneer.....\$7.50
Never Break Post Hole Diggers, 1/2
doz., \$24.00.....60%

Dividers—See Compasses.**Drawers, Money—**

Tucker's Pat. Alarm Tills, 1/2 doz.,
\$15.00 to \$20.00

Drawing Knives—

See Knives, Drawing.

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling
Machines.....\$1.50 to \$4.75
Breast, Millers Falls.....\$3.10
Breast, P. S. & W.....37 1/2%
Goodell Automatic Drills, 50¢ to 60¢ to 10%
Millers Falls Automatic Drills, 33¢ to 10%
Hatchett, Curtis & Curtis.....25%
Hatchett, Parkers.....40%
Hatchett, Weston.....40%
Hatchett, Weston's, Style H Im-
proved.....40%
Hatchett, No. 612.....40%
Hatchett, Celebrated.....40%
Hatchett, Whitney's, P. S. & W.....50%

Whitney's Hand Drill, No. 1, \$10.00

Adjustable, No. 10, \$12.00.....33 1/3%

Twist Drills—

Bit Stock.....60¢ to 10¢ to 70%
Taper and Straight Shank.....60¢ to 10¢ to 60¢ to 10¢ to 5%

Drivers, Screw—

Screw D'v'er Bits, per doz. 45¢ to 50¢
Balsey's Screw Holder and Driver, 1/2
doz., 2 1/2-in. \$6; 4-in., \$7.50; 6-in.,
\$9
Buck Bros' Screw Driver Bits.....50%
Champion.....30%
Disston's.....70%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, \$12.50
Ford's Brace Screw Drivers.....40¢ to 10%
Gay's Pontile Action Ratchet.....35%
Goodell's Auto.....65¢ to 65¢ to 10%
Mayhew's Black Hand.....40%
Mayhew's Monarch.....49%
Millers Falls, Nos. 20 and 21.....25¢ to 10%
Millers Falls, Nos. 11, 12, 41, 42, 15¢ to 10%
New England Specialty Co.....30%
Smith & Hemenway Co., Never-
turn, 66%; Elmora, 60%; Star,
30¢ to 10%
H. D. Smith & Co.'s Perfect H'dle, 40%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540,
40¢ to 10%

Eave Trough, Galvanized—

Territory. L. C. L. Galvanized
Galv. Charcoal Copper.
Steel. Iron. 14, 16¢ to 20¢ oz.
Eastern:
70¢ to 30% 70% 30%
Central:
75¢ to 65¢ to 10% 65¢ to 10% 20¢ to 10%
Western and Southern:
75¢ to 65% 65% 20¢ to 7 1/2%
So. Western:
75% 60¢ to 10% 20¢ to 5%
Terms—2% for cash. Factory ship-
ments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.....80%
No. 25.....30%
No. 21.....35%
No. 22.....10%
Copper.....40¢ to 10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40¢ to 10¢ to 10%
Edwards, Royal Blue.....40¢ to 10¢ to 10%
Reeves, Dover, one piece.....40¢ to 10%
Republic, Perfect Elbows.....50%

Emery, Turkish—

4 to \$3 to
40: 220: Flour.
Kgs.....lb. 5 1/2 5 1/2 5 1/2
1/4 Kgs.....lb. 5 1/2 5 1/2 5 1/2
1/2 Kgs.....lb. 5 1/2 5 1/2 5 1/2
10-lb. cans,
10 in. case.....6 1/2 7 6 6
10-lb. cans, less
than 10.....10 10 10 10
Less quantity 10 10 10 10
NOTE—In lots 1 to 3 tons a discount
of 10% is given.

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—Zimmerman's 50¢@10%
Upson's Patent 40¢@10%**Cord and Weight—**Ives and Titan 33%
Faucets—Cork Lined 50¢@10%
Metallic Key, Leather Lined 60¢@10%Red Cedar 40¢@10%
Petroleum 70¢@10%B. & L. B. Co. 60¢@10%
Metal Key 60¢@10%Star 60¢@10%
West Lock 60¢@10%John Sommer's Peerless Tin Key 50¢@10%
John Sommer's Boss Tin Key 50¢@10%John Sommer's Victor M. Key 50¢@10%
John Sommer's Duplex Metal Key 60¢@10%John Sommer's Diamond Lock 50¢@10%
John Sommer's L. K. L. Cork Lined 50¢@10%John Sommer's Reliable Cork Lined 50¢@10%
John Sommer's Chicago Cork Lined 60¢@10%John Sommer's O. K. Cork Lined 50¢@10%
John Sommer's No Brand, Cedar 50¢@10%John Sommer's Perfection, Cedar 40¢@10%
McKenzie, Brass—Burglar Proof, Liquor 40¢@10%
Improved, 1/4, 7/8, 1 1/2 35¢@10%Self Measuring 40¢@10%
Enterprise, 1/2 doz. \$36.00 40¢@10%Lane's, 1/2 doz. \$36.00 40¢@10%
National Measuring, 1/2 doz. \$36.00 40¢@10%**Felloe Plates—**

See Plates, Felloe.

Files— Domestic—

List Nov. 1, 1899.

Best Brand 70¢@10%
Standard Brands 75¢@10%Lower Grade 75¢@10%
Imported—

Stubs' Tapers, Stubs' list, July 23, '97 35¢@10%

Fixtures, Fire Door—Allith Underwriters' Approved 50%
Richards, No. 103; Special, No. 104 35¢@10%Fusible Links, No. 96 80%
Expansion Bolts, No. 107 60¢@10%**Grindstone—**

Net Prices:

Inch 15 17 19 21
Per doz. \$3.60 3.85 4.15 4.65P. S. & W. Co. 25%
Reading Hardware Co. 60%
Stowell's Giant Grindstone 40¢@10%Stowell's Grindstone Fixtures, Extra Heavy, 40¢@10%; Light 50%
Fodder Squeezers—

See Compressors.

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato 60¢@10%
Victor, Hay 60¢@10%Victor, Manure 60¢@10%
Victor, Header 60¢@10%Champion, Hay 60¢@10%
Champion, Header 60¢@10%Champion, Manure 60¢@10%
Columbia, Hay 60¢@10%Columbia, Manure 60¢@10%
Columbia, Spading 70¢@10%Hawkeye Wood Barley 60¢@10%
W. & C. Potato Digger 60¢@10%Acme Hay 60¢@10%
Acme Manure, 4 tine 60¢@10%Dakota Header 60¢@10%
Jackson Steel Barley 60¢@10%Kansas Header 60¢@10%
W. & C. Favorite Wood Barley 60¢@10%

Plated—See Spoons.

Frames— Wood Saw—White, 8' 6" Bar, per doz. 75¢@80¢
Red, 8' 6" Bar, per doz. 1.10¢@1.25¢
Red, 8' 6" Bar, per doz. 1.40¢@1.50¢**Freezers, Ice Cream—**Qt. 1 2 3 4 6
Each \$1.25 \$1.00 \$1.90 \$2.20 \$2.80**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

Fry Pans— See Pans, Fry.**Fuse— Per 1000 Feet.**Hemp \$2.75
Cotton 3.80
Waterproof Sgl. Taped 3.65
Waterproof Dbl. Taped 4.40
Waterproof Tpl. Taped 5.15**Gates, Molasses and Oil—**

Stebbins' Pattern 75¢@80%

Gauges—Marking, Mortise, &c. 50¢@80¢@10%
Chapin-Stephens Co. 50¢@80¢@10%
Marking, Mortise, &c. 50¢@80¢@10%
Dixson's Marking, Mortise, &c. 67%
Wire, Brown & Sharpe's 33%
Wire, Morse's 25%
Wire, P. S. & W. Co. 33%
Gimlets— Single Cut—

Numbered assortment, per gro.

Nail, Metal, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Hoes— Eye—
Scout and Oval Pattern—
 60¢ 10¢ 60¢ 10¢ 10¢
 Grub, list Feb. 23, 1899. 70¢ 10¢ 75¢ 10¢
 D. & H. Scovill. 30¢
 Am. Fork & Hoe Co. (Scovill Pat-
 tern) 60¢

Handled—
NOTE— Manufacturers are selling
 from the list of September 1, 1904, but
 many jobbers are still using list of Au-
 gust 1, 1899, or selling at net prices.
 Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
 Star Double Bit. \$3.20
 Ft. Madison Cotton Hoe. 70¢ 10¢ 10¢
 Ft. Madison Crescent Cultivator Hoe.
 70¢ 10¢
 Ft. Madison Mattock Hoe. 70¢ 10¢
 Regular Weight. 40¢ 5¢
 10¢ doz. net. \$4.00
 Ft. Madison Sprouting Hoe. 60¢ 10¢
 Ft. Madison Dixie Tobacco Hoe. 75¢ 10¢
 Kretzinger's Cut Easy. 70¢ 10¢
 Warren Hoe. 45¢ 10¢
 A. & C. Ivahoe. 75¢ 10¢
 B. B. 6 in. Cultivator Hoe. \$3.40
 B. B. 6 in. 10¢ doz. net. \$4.35
 W. & C. L. Tining Shovel Hoe. 40¢ 5¢

Hoisting Apparatus—
 See Machines, Hoisting.
Holders— Bit—
 Angular. 45¢ 10¢
Door—
 Bardley's, Iron. 40%; Brass and
 Bronze. 25¢
 Composite. 50¢
 Pullman. 35¢
 Richards Mfg. Co.: No. 117, Ever-
 ready, 40%; Nos. 118, 119, Sure-
 Grip. 50¢
 Superior. 33 1/2%
File and Tool—
 Nicholson File Holders and File
 Handles. 33 1/2% 40%
Fruit Jar—
 Triumph Fruit Jar Holder. 40¢ gross,
 \$10.80; 40¢ doz. \$1.25
Trace and Rein—
 Fernald Double Trace Holder. 40¢ doz.
 pairs. \$1.25
 Dash Rein Holder. 40¢ doz. pairs. \$1.25

Hones—Razor—
 Pike Mfg. Co., Belgian and Swaty,
 50%; German. 30% 75%
Hooks—Cast Iron—
 Bird Cage, Reading. 40%
 Clothes Line, Reading List. 40%
 Clothes Line, Stowell's. 70%
 Coat and Hat, Reading. 45¢ 20¢
 Coat and Hat, Stowell's. 70%
 Coat and Hat, Wrightsville. 60¢ 5¢
 Coat and Hat, Reading List. 40%
 Starness, Stowell's. 60%
 School House, Stowell's. 70%
Wire—
 Bell. 80%
 Wire C. & H. Hooks. 70¢ 70¢ 10¢
 Bradley Metal Clasp Wire, Coat and
 Hat, 70¢ 10¢; Ceiling. 70¢ 10¢
 Columbian Hdw. Co., Gem. 70¢ 10¢
 Parker Wire Goods Co., King. 70¢ 10¢
 Western W. G. Co. Molding. 75%
 Wire Goods Co.:
 Acme, 60¢ 10¢; Chief, 70%; Crown,
 75%; Czar, 65%; V. Brace, 75%;
 Czar Harness, 50¢ 10¢

Wrought Iron—
 Box, 6 in., per doz. \$1.00; 8 in.,
 \$1.25; 10 in., \$2.50.
 Cotton. 40¢ 10¢ 10¢ \$1.05 \$1.25
 Wrought Staples, Hooks, &c.—
 See Wrought Goods
Miscellaneous—
 Hooks, Bench, see Staps, Bench.
 Bush, Light, doz. \$6.20; Medium,
 \$6.75; Heavy, \$7.65
 Grass, best, all sizes, per doz. \$3.00
 Grass, common grades, all sizes,
 per doz. \$1.75
 Whiffletree. 10¢ 5¢ 4¢
Hooks and Eyes—
 Brass. 60¢ 60¢ 10¢
 Malleable Iron. 70¢ 70¢ 10¢
 Corv. Mfg. Co. Gate and Scuttle
 Hooks. 40%
 Ft. Madison Cut-Easy Corn Hooks,
 40¢ 10¢ 10¢ \$1.25 net
 Turner & Stanton Co. Cup and
 Shoulder. 80¢ 10¢
 Bench L. 40¢—See Bench Hops.
 Corn Hooks—See Knives, Corn.

Horse Nails—
 See Nails, Horse.
Horseshoes—
 See Shoes, Horse.
Hose, Rubber—
 Garden Hose, 1/2-inch.
 Competition. 5 ft. 5 @ 6¢
 5-ply Guaranteed. 8 ft. 8 @ 9¢
 4-ply Guaranteed. 10 ft. 10 @ 11¢
 Cotton Garden, 1/2-in., coupled.
 Low Grade. 8 ft. 8 @ 9¢
 Fair Quality. 10 ft. 10 @ 11¢

Irons—Sad—
 From 4 to 10. 10 lb. 3 @ 3 1/2¢
 B. B. Sad Irons. 10 lb. 3 @ 3 1/2¢
 Mrs. Potts, cents per set:
 Nos. 60 50 60 65
 Jap'd Tops. 83 80 93 91
 Tin'd Tops. 88 85 98 95
 New England Pressing 10 lb. 3 @ 4¢
Bar and Corner—
 Richards Mfg. Co., Bar, 60¢ 10%
 Corner. 60%
Pinking—
 Pinking Irons. 40¢ 10%
 See Corners.
Jacks, Wagon—
 Covert Mfg. Co.:
 Auto Screw. 30¢ 2%; Steel, 45%
 Lockport. 50%

Lane's Steel. 30¢ 5%
 Richards' Tiger Steel, No. 1. 30¢ 10%
 Smith & Hemenway Co.'s. 25%
Ladder—
 Richards Mfg. Co., Ladder Jacks. 50%

Kettles—
 Brass, Spun, Plain. 20¢ 25%
 Enamelled and Cast Iron—See Ware,
 Hollow.
Knives—
 Butcher, Kitchen, &c.—
 Foster Bros. Butcher, &c. 30%
 Wilkinson Shear & Cutlery Co. 60%

Corn—
 Columbian Cutlery Co., Wilcut
 Brand Knives and Hooks. 60%
 Wilmington Acme. 40¢ doz. \$2.50
 Deut. \$2.75; Adj. Serrated. 20%
 Serrated. \$2.10; Yankee No. 1, \$1.50;
 Yankee No. 2, \$1.15.

Drawing—
 Standard List. 75¢ 45¢ 75¢ 10%
 C. E. Jennings & Co., Nos. 45, 46,
 47. 25¢ 7 1/2%
 Jennings & Griffin, Nos. 41, 42,
 43. 60¢ 7 1/2%
 Swan's. 66¢ 70%
 Watrous. 16%
 L. & J. J. White. 20¢ 5¢ 25%

Hay and Straw—
 Serrated Edge, per doz. \$5.50 @ 5.75
 Iwan's Sickle Edge. 40¢ doz. \$9.50
 Iwan's Serrated. 40¢ doz. \$10.00

Mincing—
 Buffalo. 40¢ gro. \$13.00
Miscellaneous—
 Farriers. 40¢ doz. \$3.00 @ 3.25
 Westenhelm's. 40¢ doz. \$3.00 @ 3.25

Knobs—
 Base, 2 1/2-inch, Birch, or Maple,
 Rubber Tip. 40¢ pro. \$1.50 @ 1.40
 Carriage, Jap., all sizes. 40%
 Door, Mineral. 40¢ doz. \$5.00 @ 5.75
 Door, Por. Jap'd. 40¢ doz. \$5.00 @ 5.75
 Door, Por. Nickel. 40¢ doz. \$5.00 @ 5.75
 Bardley's Wood Door, Shutters, &c. 15%

Lacing, Leather—
 See Belting, Leather.
Ladders, Store, &c.—
 Allith Mfg. Co., Reliable. 50%
 Lane's Store. 25%
 Myers' Noiseless Store Ladders. 45%
 Richards Mfg. Co.:
 Improved Noiseless, No. 112. 50%
 Climax Shelf, No. 113. 50%
 Trolley, No. 109. 50%

Ladies, Melting—
 L. & G. Mfg. Co. (low list). 20%
 P. S. & W. 40¢ 10%
 Reading. 60%

Lanterns—Tubular—
 Regular, No. 0. 40¢ doz. \$4.35 @ 4.50
 Side Lift, No. 0. 40¢ doz. \$4.60 @ 4.75
 Hinge Globe, No. 0. 40¢ doz. \$4.60 @ 4.75
 Other Styles. 40¢ 40¢ 10%

Bull's Eye Police—
 3-inch. \$1.25 @ 1.40
Lasts and Stands, Shoe—
 Stowell's Atlas, Malleable Iron. 50%
 Stowell's Badger, Cast Iron. 50%

Latches—Thumb—
 Roggin's Latches, with screw. 40%
Door—
 Allith Mfg. Co., Reliable and Alleg-
 ator, 50%; Reliable Cold Storage, 50%
 Cronk & Carrier Mfg. Co., No. 101.
 40¢ doz. \$2.30
 Richards' Bull Dog, Heavy, No.
 125. 50¢ 5%
 Richards' Trump, No. 127. \$1.50
 Stowell's Steel. 50%

Leaders, Cattle—
 Small. 40¢ doz. 50¢; large, 60¢
 Covert Mfg. Co.:
 Cotton, 45%; Hemp, 45%; Jute, 35%;
 Sisal, 20%.

Leathers, Pump—
 See Pumps.
Lifters, Transom—
 R. & E. 10%

Lines—
 Wire Clothes, Nos. 18 19 20
 10¢ 10¢ 20¢ \$2.50 2.25 2.00
 75¢ 10¢ \$1.75 1.55 1.10
 Semson Cordage Works:
 Solid Braided Chalk, Nos. 0 to 3. 40%
 Solid Braided Makers. 30%
 Silver Lake Solid Chalk, No. 0.
 \$6.00; No. 1, \$4.50; No. 2, \$7.00; No.
 3, \$7.50. 20%
 Mason's Lines, Shade Cord, &c.:
 White Cotton, No. 3 1/2, \$1.50; No. 4,
 \$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
 \$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;
 Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
 No. 4 1/2, \$4.50. 20%
 Tent and Awning Lines: No. 5
 White Cotton. \$7.50; Drab Cotton,
 \$8.50. 20%
 Clothes Lines, White Cotton: 50 ft.
 \$2.75; 60 ft. \$3.25; 70 ft. \$3.75; 75
 ft. \$4.00; 80 ft. \$4.25; 90 ft. \$4.75;
 100 ft. \$5.25. 20%
 Turner & Stanton Co.:
 Solid Braided Chalk, Mason's and
 Awning Lines. 40%
 Clothes Lines, White Cotton. 20%
 Shade Cord, Cotton or Linen. 20%

Locks—
 Cabinet—
 Cabinet Locks. 33 1/2%
Door Locks, Latches, &c—
NOTE— Net Prices are very often made
 on these goods.
 Reading Hardware Co. 40%
 R. & E. Mfg. Co. 10%
 Stowell's. 50%

Padlocks—
 R. & E. Mfg. Co. Wrought Steel and
 Brass. 75¢ 10%
Sash, &c.—
 Iron Patent:
 Bronze and Brass, 55¢ 5%; Crescent,
 60%; Iron, 60%; Window Ventilat-
 ing, 40¢ 20%; Robinson Pat's Ventil-
 ating Sash Lock, 33 1/2%.

Pullman Patent Ventilating Lock. 35%
 Reading. 40%

Machines—Boring—
 Com. Up'r'l, without Augers. 2.00 @ 2.25
 Com. Ang'l'r, without Augers. 2.25 @ 2.50
 Swan's Improved. 40¢ 10%
 Jennings', Nos. 1 and 4. 25¢ 7 1/2%
 Snell's, Upright. \$2.65; Angular, \$2.90

Corking—
 Reisinger Invinible Hand Power. 40¢
 40¢ doz. \$48.00

Fence—
 Williams' Fence Machines. each. \$5.50
Hoisting—
 Moore's Anti-Friction Chain Hoist. 30%
 Moore's Hand Hoist, with Lock
 Brake. 20%
 Moore's Cyclon, High Speed Chain
 Hoist. 25%

Ice Cutting—
 Chandler's. 12 1/2%
Washing—
 Boss Washing Machine Co.: Per doz.
 Boss No. 1. \$57.00
 Boss Rotary. \$57.00
 Champion Rotary Banner No. 1. \$57.00
 Standard Champion No. 1. \$57.00
 Standard Perfection. \$57.00
 Cincinnati Square Western. \$57.00
 Uneda American, Round. \$57.00

Mallets—
 Hickory. 45¢ 45¢ 50%
 Lignumvitae. 45¢ 45¢ 50%
 Timmer's Hickory and Apple-
 wood. 40¢ 45¢ 50%

Mangers, Stable—
 Sweet Iron Works. 50%
Mashers, Vegetable—
 Western, W. G. Co., Potato. 60¢ 10%

Mats, Door—
 Elastic Steel (W. G. Co.), new list. 50%
 Keystone Wire Matting Co.:
 Ideal. 50%

Mattocks—
 See Picks and Mattocks.
Milk Cans—See Cans, Milk.
Mills, Coffee, &c.—
 Enterprise Mfg. Co. 20¢ 25%
 National list Jan. 1, 1902. 30%
 Parker's Columbia and Victoria. 30%
 Parker's Box and Side. 30% 10%
 Swift, Lane Bros. Co. 25%

Motors Water—
 Divine's Red Devil. 30%
Mowers, Lawn—
NOTE— Net prices are generally quoted
 Chicago. 40¢ all sizes, \$1.85 @ 2.00
 Cheap. 40¢ all sizes, \$2.00 @ 2.50
 Better Grade. 40¢ all sizes, \$2.50 @ 4.50
 12 14 16 18 in.
 High Grade. \$4.50 4.75 5.00 5.25
 Continental. 60%
 Great American. 70%
 Great American Hall B'r's, new list. 70%
 Quaker City. 70%
 Pennsylvania. 60%
 Pennsylvania, Jr., Ball Bearing.
 50¢ 10¢ 5%
 Pennsylvania Golf. 50%
 Pennsylvania Horse. 30% 45%
 Granite State:
 Style A, Low Wheel. 70¢ 10%
 Style B, Low Wheel. 70¢ 5%
 Style C, High Wheel, spl. disc. 70%
 Style D, High Wheel, spl. disc. 70%
 Philadelphia:
 Styles M. S. C. K. T. 70¢ 10% 5%
 Style A, All Steel. 60¢ 10% 5%
 Style E, High Wheel. 70¢ 10% 5%
 Drexel and Gold Coin, special list. 40%
 Horse. 40¢ 5%
 Pony. 40% 5%
 26-in. Horse. 30¢ 10%
 Eagle Horse. 30¢ 5%
 I. X. L. Horse. 50%

Nails—
 Wire Nails and Brads, Miscel-
 laneous. 87 1/2% 87 1/2% 10%
 Cut and Wire. See Trade Report.
 Hungarian. Finishing. Upholster-
 ers' &c. See Tacks.

Horse—
 Anchor. Nos. 23 21 20 19 18. 40¢ 5%
 Champlain. 28 26 25 24 23. 50%
 Coleman. 13 12 12 11 11. net
 New Haven. 23 21 20 19 18. 40¢ 5%
 Livingston. 19 18 17 16 16. 10%
 Western. 20%
 Jobbers' Special Brands. 20%
 per lb. 9 @ 10¢

Picture—
 Brass H'd. 45 55 60 70 70. pro
 Por. Head. 1.10 1.10 1.10 1.10. pro

Nippers—
 See Pliers and Nippers.
Nuts—
 Cold Punched: Off list.
 Square, Blank or Tapped. 4.80¢
 Hexagon, Blank or Tapped. 5.10¢
 Square, B'l'k. C. T. & R. 5.10¢
 Hexagon, B'l'k. C. T. & R. 5.10¢
 Hot Pressed:
 Square, Blank. 5.00¢
 Hexagon, Blank. 5.40¢
 Square, Tapped. 4.70¢
 Hexagon, Tapped. 5.10¢

Oakum—
 Rest. 10¢ 10¢ 10¢ 10¢ 10¢
 U. S. Navy. 10¢ 10¢ 10¢ 10¢ 10¢
 Navy. 10¢ 10¢ 10¢ 10¢ 10¢
 Plumbers' Spun Oakum. 10¢ 10¢
 In carload lots 1/2 lb. 10¢ f.o.b.
 New York.

Oil Tanks—See Tanks, Oil.

Oilers—
 Brass and Copper. 50¢ 10%
 Tin or Steel. 65¢ 10¢ 45¢ 70%
 Zinc. 65¢ 10¢ 45¢ 70%

Chase or Paragon—
 Brass and Copper. 50¢ 10%
 Tin or Steel. 65¢ 10%
 Zinc. 65¢ 10%
 Malleable, Hammers' Improved, Nos.
 11, 12 and 13, 20%; Old Pattern, Nos.
 1, 2, 3, 50%.

**American Tube & Stamping Co.:
 Spring Bottom Cans. 70¢ 70¢ 10%
 Railroad Oilers, &c. 60¢ 60¢ 10%**

**Openers, Can—Per doz.
 Sprague, Iron Handle. 30¢ 35¢
 Sprague, Wood Handle. 35¢ 40¢
 Sardine Sclissors. \$1.75 @ \$3.00
 Vim Tin Shear and Can Opener.
 40¢ doz. 75¢; per gro. \$7.50
 Yankee Can and Bottle Opener.
 40¢ doz. net. \$0.75; Little Gem.
 40¢ doz. net. \$0.65**

**Nickel Plate, 40¢ doz., \$2.00; Silver
 Plate, \$4.00.**

Packing—
 Asbestos Packing, Wick and
 Rope. 20¢ 25¢
Rubber—
 (Fair quality goods.)
 Sheet, C. I. 11¢ 12¢
 Sheet, C. O. S. 11¢ 12¢
 Sheet, C. B. S. 12¢ 13¢
 Sheet, Pure Gum. 40¢ 45¢
 Sheet, Red. 40¢ 45¢
 Jenkins' 56, 30 lb. 50¢ 25%

Miscellaneous—
 American Packing. 10¢ 70¢ 10¢
 Cotton Packing. 10¢ 10¢ 25¢
 Italian Packing. 10¢ 10¢ 12 1/2¢
 Jute. 10¢ 40¢ 1 1/2¢
 Russia Packing. 10¢ 8¢ 11¢

Pails, Creamery—
 R. M. Co., with gauges. 40¢ doz.,
 No. 30, \$3.75; No. 1200, \$8.10.

Pails, Water, Well, &c.—
 See Buckets.

Pans—Dripping—
 Standard List. 65¢ 7 1/2% 60¢ 70%
 Edwards, Royal Bell. 65¢ 7 1/2%
Fry—
 Common Lipped:
 Nos. 1 2 3 4 5
 Per doz. \$0.75 0.80 0.90 1.10 1.30
Refrigerator, Galva.—
 Inch. 12 14 16 18 15
 Per doz. \$1.75 2.25 2.80 3.15

Roasting and Baking—
 R. M. Co.:
 Regal. 40¢ doz., Nos. 5, \$3.75; 10,
 \$4.75; 20, \$5.50; 30, \$6.00.
 Savory. 40¢ doz., net. Nos. 200,
 \$8.75; 400, \$16.50; 2000, \$11.00; 2500,
 \$16.80.
 Simplex. 40¢ doz.:
 No. 400, 40 50 60 140 150 160
 \$2.50 3.00 3.50 2.75 3.35 4.00

Paper—Building Paper—
 Asbestos. 10¢
 Roll Board or Building Felt,
 6 to 30 lb., per 100 sq. ft. 3 1/2¢ 5¢
 Roll Board or Building Felt,
 3-32 and 1/4 in., 45 to 60 lb.,
 per 100 sq. ft. 4¢ 5¢
 Mill Board, Sheet, 40 x 40 in.,
 1-32 to 1/4 in. 3¢ 4 1/2¢
Per roll
 500 sq. ft. 50¢ 50¢
 Light weight, 25 lbs. to roll. 40¢ 50¢
 Medium weight, 30 lbs. to roll. 50¢ 55¢
 Heavy weight, 40 lbs. to roll. 65¢ 70¢

**Black Water Proof Sheathing,
 500 sq. ft., 1 ply, 65¢; 2 ply,
 85¢; 3 ply, \$1.10; 4 ply, \$1.25.
 Denfening Felt, 9, 6 and 4 1/2 sq.
 ft. to 10. ton. \$50.00
 Red Rope Roofing, 250 sq. ft.
 per roll. \$1.75**

Tarred Paper—
 1 ply (roll 400 sq. ft.), ton. \$35.00 @ \$38.00
 2 ply, roll 108 sq. ft. 68¢
 3 ply, roll 108 sq. ft. 98¢
 Slater's Felt (roll 500 sq. ft.). 75¢
Sand and Emery—
 Flint Paper and Cloth. 50¢ 10¢ 25%
 Garnet Paper and Cloth. 25%
 Emery Paper and Cloth. 50¢ 10¢ 25%

Parers—Apple—
 Goodell Co.:
 Family Bay State. 40¢ doz. \$15.00
 Improved Bay State. 40¢ doz. \$36.00
 New Lightning. 40¢ doz. \$7.00
 Turn Table. 40¢ doz. \$6.00
 White Mountain. 40¢ doz. \$5.00
 Bonanza Improved. 40¢ doz. \$7.50
 Dandy. 40¢ doz. \$10.00
 Eureka Improved. 40¢ doz. \$20.00
 New Century. 40¢ doz. \$20.00
 Ranger. 40¢ doz. \$25.00
 Livingston Nail Co.:
 Daisy. 40¢ doz. \$4.00
 Little Star. 40¢ doz. \$5.00
 Rocking Table. 40¢ doz. \$6.25
 Reading Hardware Co.:
 Advance. 40¢ doz. \$4.00
 Baldwin. 40¢ doz. \$4.00
 Reading 72. 40¢ doz. \$3.25
 Reading 78. 40¢ doz. \$6.25

Potato—
 Saratoga. 40¢ doz. \$7.00
 White Mountain. 40¢ doz. \$6.00

Picks and Mattocks—
 List, Feb. 23, 1899. 70¢ 5¢ 70¢ 10%
 Cronk's Handled Garden Mattock,
 40¢ doz., No. 2, \$2.00; No. 3, \$3.40.

Pinking Irons—
See Irons, Pinking.**Pincers—**

Vaughan & Bushnell Mfg. Co.:
Blacksmiths', per doz., 10 in.,
\$5.00; 12 in., \$5.50; 14 in., \$6.00.
Carpenters' Claw, per doz., 6 in.,
\$2.00; 8 in., \$2.75; 10 in., \$3.50.

Pins, Escutcheon—

Brass 50¢ @ 50¢ & 10¢
Iron, nat. Nov. 11, 1906 60¢ @ 60¢ & 10¢

Pipe, Cast Iron Soil—

Standard, 2-6 in. 50%
Extra Heavy, 2-6 in. 60%
Fittings, Stand. and H'ey. 70%

Pipe, Merchant—

Consumers, Carloads.
Steel. Iron.
Blk. Galv. Blk. Galv.
1/2 in. 6 in. 6 in. 6 in.
1/2 in. 6 in. 6 in. 6 in.
1/2 in. 6 in. 6 in. 6 in.
1/2 in. 6 in. 6 in. 6 in.
1/2 in. 6 in. 6 in. 6 in.
1/2 in. 6 in. 6 in. 6 in.

Pipe, Vitified Sewer—

Carload lots.
Standard Pipe and Fittings, 3
to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%
N.Y.E.—Market irregular.

Pipe, Stove—

Per 100 joints.
C. L. L. C. L.
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25
5 in. Standard Blue \$4.25

Planes and Plane Irons—

Wood Planes—
Bench, first qual. 30¢ @ 30¢ & 10¢
Bench, second qual. 30¢ @ 30¢ & 10¢
Molding 25¢ @ 25¢ & 10¢
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 25%
Molding and Miscellaneous 30%
Toy and German 30%
Union 60%

Iron Planes—

Chapin's Iron Planes 50% & 10%
Union 60%
Plane Irons—
Wood Bench Plane Irons, list
Dec. 12, '06 25%
Buck Bros. 30%
Chapin-Stephens Co. 25%
Union 50%
L. & J. White 20% & 25%

Planters, Corn, Hand—

Kohler's Eclipse 1/2 doz. \$8.00

Plates—

Fellow 1/2 lb. 4¢ @ 4¢
Self-Sealing Pie Plates (L. M.
Co.), 1/2 doz. \$2.00 50%

Pliers and Nippers—

Button Pliers 75¢ @ 75¢ & 10%
Gas Burner, per doz., 5 in., \$1.25
@ \$1.30; 6 in., \$1.45 @ \$1.50.
Gas Pipe, 7 8 10 12 in.
\$2.00 \$2.25 \$2.75 \$3.50
Acme Nippers 50¢ & 5%
Cronk & Carrier Mfg. Co.:
American Button 80%
Improved Button 75% & 10%
Cronk's 60%
No. 90 Linemen's 50%
Stub's Pattern 45%
Combination and others 35%
Heller's Farmers' Nippers, Pincers
and Tools 40% & 5¢ @ 10¢ & 5%
The Nettleton Mfg. Co. Reversible
Cutting Nippers 40%
P. S. & W. Timmers' Cutting Nippers
..... 40%
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%;
Paragon, 50%; Lodi, 55%
Swedish Side, End and Diagonal Cut-
ting Pliers 60%
Utica Drop Forge & Tool Co.:
Pliers and Nippers all kinds 40%
Vaughan & Bushnell Mfg. Co.:
Gas Burner, per doz., 5 in., \$2.50;
6 in., \$3.00.
Gas, per doz., 7 in., \$3.50; 8 in.,
\$3.75; 10 in., \$4.50.
Nippers, Horsehoofers' Cutting, 40%;
Hoof Paring 40%

Plumbs and Levels—

Chapin's Co.:
Plumbs and Levels 30¢ @ 30¢ & 10%
Chapin's Imp. Brass Cor. 40¢ @ 40¢ & 10%
Pocket Levels 30¢ @ 30¢ & 10%
Extension Sights 30¢ @ 30¢ & 10%
Machinists' Levels 40¢ @ 40¢ & 10%
Disston's Plumbs and Levels 60¢ & 10%
Disston's Pocket Levels 60¢ & 10%
Stanley's Duplex 75%
Woods' Extension 35%

Poachers, Egg—

Buffalo Steam Egg Poachers, 1/2 doz.
Nos. 00, \$3.75; 0, \$6.00; 1, \$5.50;
2, \$8.00; 600, \$15.00 40%

Points, Glaziers—

Bulk and 1-lb. papers 1/2 lb. 10¢
1-lb. papers 1/2 lb. 9¢ @ 10¢
1/4-lb. papers 1/2 lb. 8¢ @ 10¢

Police Goods—

Manufacturers' Lists 35¢ @ 35¢ & 10%
Towers 25%

Polish—Metal, Etc—

Glasshite, No. 2, 5 lb. can (powder),
each, \$1.25; 10 lb. can, \$2.00; No. 2, 10 lb.
can (cake), each \$2.50; 1/2 doz., \$24.00

Prestoline Liquid, No. 1 (1/2 pt.), 1/2
doz., \$3.00; No. 2 (1 qt.), \$2.00, 40%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz.
boxes, 1/2 doz., \$2.00; 1/2 doz., \$4.00
1/2 lb. boxes, 1/2 doz., \$1.25; 1 lb.
boxes, 1/2 doz., \$2.25.
U. S. Liquid, 8 oz. cans, 1/2 doz.,
\$1.25.
Buckeys' Friend Metal Polish, 1/2
doz., \$1.75.

Stove—

Black Eagle Benzine Paste, 5 lb. cans,
1/2 doz., \$1.00
Black Eagle, Liquid, 1/2 pt. cans,
1/2 doz., 75¢
Black Jack Paste, 1/2 lb. cans, 1/2 doz., \$0.00
Black Kid Paste, 5 lb. cans, each, \$0.65
Ladd's Black Beauty Liquid, per
100 lbs. \$6.75
Joseph Dixon's, 1/2 gr. \$5.75 10%
Dixon's Plumbago 1/2 lb. 8¢
Fireside 1/2 gr. \$2.50
Gem, 1/2 gr. \$1.50 10%
Japanese 1/2 gr. \$3.50
Jet Black 1/2 gr. \$3.50
Peerless Iron Enamel, 10 oz. cans,
1/2 doz., \$1.50

Poppers, Corn—

1 qt. Square, doz. \$0.88; gro. \$8.75
1 qt. Round, doz. \$1.00; gro. \$10.00
1/2 qt. Square, doz. \$1.10; gro. \$11.00
2 qt. Square, doz. \$1.35; gro. \$13.50

Post Hole and Tree Au-

gers and Diggers—
See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Post, each, 5 ft., 42¢;
6 ft., 46¢; 6 1/2 ft., 48¢
Steel Hitching Posts each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled 35¢ @ 10%
Tinned 30¢ @ 10%

Powder—

In Canisters:
Duck, 1 lb. each 45¢
Fine Sporting, 1 lb. each 75¢
Rifle, 1/2 lb. each 15¢
Rifle, 1 lb. each 25¢

In Kegs:

12 1/2-lb. kegs \$3.50
25-lb. kegs \$4.50
King's Semi-Smokeless:
Keg (25 lb. bulk) \$6.50
Keg (12 1/2 lb. bulk) \$3.50
Quarter Keg (6 1/4 lb. bulk) \$1.90
Case 24 (1 lb. cans bulk) \$3.50
Half case (1 lb. cans bulk) \$4.50
King's Smokeless: Shot Gun, Rifle.
Keg (25 lb. bulk) \$12.00 \$15.00
Keg (12 1/2 lb. bulk) 6.25 7.75
Quarter Keg (6 1/4 lb. bulk) 3.25 4.00
Case 24 (1 lb. cans bulk) 14.00 17.00
Half case 12 (1 lb. c. bk.) 7.25 8.75
Robin Hood Sm'less Shot Gun, 50¢ @ 20%

Presses—

Enterprise Fruit & Jelly 20¢ @ 25%

Seal Presses—

Morrill's No. 1, 1/2 doz., \$20.00 50%

Pruning Hooks and Shears

See Shears.

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, doz., \$12.00 35% & 10%
Morrill's No. 1, Nail Puller, 1/2 doz.
\$20.00 50%
Pearson No. 1, Cyclone Spike Puller,
each \$30.00 50%
The Scranton Co., Case Lots:
No. 245 (larger) \$5.50
No. 3B (small) \$5.00
Smith & Hemenway Co.:
Diamond B. 70%
Giant 50%
Staple Pullers, Utica and Davi-
son 50%
Parrot Tack and Stub Puller, 1/2 doz.
75¢; 1/2 doz., \$0.00

Pulleys, Single Wheel—

Inch 1/2 1/4 1/2 1/4 1/2 1/4
Avening or Tackle, 1/2 doz. \$0.30 .45 .60 1.05
Hay Fork, Sivel or Solid Eye,
doz., 1/2 in., \$1.25; 5 in., \$1.55
Inch 1/2 1/4 1/2 1/4 1/2 1/4
Hot House, doz. \$0.65 .85 1.20
Inch 1/2 1/4 1/2 1/4 1/2 1/4
Soreau, doz. \$0.16 .19 .35 .50
Inch 1/2 1/4 1/2 1/4 1/2 1/4
Side, doz. \$0.35 .40 .55 .60
Inch 1/2 1/4 1/2 1/4 1/2 1/4
Stowell's:
Ceiling or End, Anti-Friction, 60¢ @ 10%
Dumb Waiter, Anti-Friction, 60¢ @ 10%
Electric Light 60%
Side, Anti-Friction 60¢ @ 10%

Sash Pulleys—

Common Frame; Square or
Round End, per doz. 1/4 and
2 in. 17¢ @ 20¢
Auger Mortise, no Face Plate
per doz., 1/4 and 2 in. 20¢ @ 21¢
Acme, No. 35, 1 1/2 in., 19¢; 2 in., 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.
doz. 50¢
Grand Rapids All Steel Noiseless 50%
Ideal 70% & 5%
Niagara, No. 25, 1 1/2 in., 19¢; 2
in. 20¢ @ 21¢
No. 26, Tron, 1 1/2 in., 14 1/2¢; 2 in., 16 1/2¢
Star, No. 26, 1 1/2 in., 19¢; 2 in., 20¢ @
Tackle Blocks—See Blocks.

Pumps—

Cistern 60%
Pitcher Spout 75¢ @ 75¢ & 10%
Wood Pumps, Tubing, &c. 35¢ @ 50%
Barnes Dbl. Acting (low list) 40¢ & 5%
Barnes Pitcher Spout 75¢ & 5%
Contractors' Rubber Diaphragm No.
2, B. & T. Block Co. \$16.00
Daisy Spray Pump 1/2 doz. \$6.50

Flint & Walling's Fast Mail Hand,
(low list) 50%
Flint & Walling's Fast Mail (low
list) 50%
Flint & Walling's Tight Top Pitcher
..... 75¢ @ 10%
National Specialty Mfg. Co. Measur-
ing, Nos. 2, \$6.00; 3, \$5.50 30%
Myers' Pumps (low list) 45%
Myers' Power Pumps 45%
Myers' Spray Pumps 45%

Pump Leathers—

Plunger and Lower Valve—Per
gro.:

Inch. 2 2 1/4 2 1/2 2 3/4
\$2.20 2.50 2.75 3.00
Inch. 3 3 1/4 3 1/2 3 3/4
\$3.30 3.60 3.85 4.10 4.40

Plunger Cup Leathers—Per 100:

Inch. 2 2 1/4 2 1/2 2 3/4
\$2.75 3.85 5.00 6.00

Punches—

Saddlers' or Drive, good doz. 50¢ @ 75¢

Spring, single tube, good qual-
ity 1/2 doz. \$1.75 @ 2.00

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Bemis & Call Co.'s Cast St'l Drive, 50%
Morrill's Nos. 1A, 1A, 1B, 1C,
1D, \$15.00 50%

Hurcules, 1 die, each \$5.00 50%

Niagara Hollow Punches 40%

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Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%;
Paragon, 50%; Lodi, 55%
Timmers' Hollow, P. S. & W. Co. 40%
Timmers' Solid, P. S. & W. Co. 40%
doz., \$1.44 40%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 1/2
doz. \$1.25 @ 1.50

Sliding Door, Wrought Brass,
1/2 in., 1/2, 3/4, 1 in., 1 1/4, 1 1/2, 1 3/4, 2 in.,
2 1/2, 3 in., 3 1/2, 4 in., 4 1/2, 5 in., 5 1/2, 6 in.,
6 1/2, 7 in., 7 1/2, 8 in., 8 1/2, 9 in., 9 1/2, 10 in.,
10 1/2, 11 in., 11 1/2, 12 in., 12 1/2, 13 in., 13 1/2,
14 in., 14 1/2, 15 in., 15 1/2, 16 in., 16 1/2, 17 in.,
17 1/2, 18 in., 18 1/2, 19 in., 19 1/2, 20 in., 20 1/2,
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